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INVESTIGATIONS CONCERNING THE RELATION BETWEEN THE SPECTRUM OF INORGANIC SUBSTANCES AND THEIR BIOLOGICAL ACTION.

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Read before the San Francisco Medico-Chirurgical Society.

In 1839, I presented to the Académie de Médecine, a memoir in which I proved that the action of saline substances injected into the blood, is determined by the base of the salt. In pursuing my researches, always in the same direction, I have found that the action of a number of inorganic substances depends on their isomorphic relations, and that all the substances pertaining to the same isomorphic group yield nearly the same biological reactions.

This fact was published in a memoir which I read before the Royal Society of London, in 1841, and has been confirmed by the experiments which I have made with the compounds of more than forty elements. Among all these elements there are only two of which the biological action is not in accord with their isomorphic conditions: these two are nitrogen and potassium. I will refer to this later.

Although the same element forms two classes of salts which belong to distinctly isomorphic groups, the biological action of the salts of each class is wholly different, but it is found in accord with the other substances of the group to which they belong.

There is another fact which I have observed, which attaches the biological action of these substances to their molecular constitution; this is, that in the same isomorphic group, the biological action increases in intensity with the atomic weights of the elements which are combined. The more the atomic weight of an element is increased, the less there is needed of it to excite the same biological reaction. This is a fact which demonstrates, in a marked manner, the difference between these biological actions and the ordinary chemical reactions.

In studying from a biological point of view, the reaction of these substances, I have found that this occurs through their action upon

the nervous centers of organic life; and this is more or less specialized for each group than can be explained through these reactions. Thus, for the compounds of the alkaline metals, the action is especially upon the ganglia of the heart; for the compounds of phosphorus, of arsenic, and of antimony, the action is upon the splanchnic ganglia; and for the substances of the magnesia group, the action is upon the center of vomiting; and the same is true for the other groups, viz: the action consists in modifying the action of some nervous center.

The spectroscope has opened to us a way in which physics and chemistry meet, and in which the molecular vibrations of which we are able to count the number and measure the length, give place to reactions of which, as yet, we are only able to grasp the results, without having found the nature of the facts which determine them. Thanks to this progress, which is related to the questions which we are now considering, I believe that to-day we are in a position to explain why chemistry is not able to give an account of the results of my former experiments, but also we are in a position to find the direction in which it is necessary to seek the law which links the biological action of these inorganic substances with their physico-chemical properties.

In 1867, Mitscherlich discovered that the elements of the same isomorphous group have spectra which resemble each other, or which are identical. There are, nevertheless, two elements, nitrogen and potassium, which form an exception to this rule, and these are the two elements which alone form an exception to the rule according to which the biological action of the elements depends upon their isomorphous character. It is this which has led me to seek whether the action of these substances upon living matter is not connected with the molecular vibrations of which they are the seat and which is unveiled in their spectra.

It is found, as I have already remarked, that the substances which are isomorphous, give rise to the same biological reactions when they have homologous spectra; but when, in an isomorphous group, there occur elements of which the spectra do not resemble the spectra of other elements of the group, these elements, having anomalous spectra, give rise also to anomalous biological reactions. When, as I have already said, one element gives rise to two classes of salts, the biological action of the two classes is very different, and there is also a marked difference between the spectra of the substances in the two classes.

The biological action of the elements in the different isomor-

phic groups shows that, for two of these groups, it is only upon the peripheral ganglionic centers that they act; these are the group of the alkaline metals and the group of phosphorus.

As to the alkaline metals, I have demonstrated that after the injection of several grammes of nitrate of sodium into the veins of an animal, it is able to live during several hours without any sign of reaction on the part of any nervous center. The same is true when one injects the compounds of phosphorus, arsenic, and antimony into the veins. After the injection of three grammes of arsenious acid into the veins, one does not observe any symptom that indicates any action upon the cerebro-spinal nervous centers.

These two isomorphic groups have spectra which are very simple. Of all the alkaline metals, sodium and thallium give the most simple spectra, and the salts of these can be found in the blood in larger quantities without acting upon the central nervous ganglion; whilst, on the other hand, the salts of cæsium, with a more complicated spectrum, give rise to milder symptoms when they are injected into the arteries. In the group of phosphorus the same phenomenon repeats itself. Nitrogen, also, which has a very complicated spectrum, is an element, the presence of which is revealed by its action upon the nervous centers and it is distinguished in a marked manner from other elements of the same group.

There are other facts which can be explained more readily by taking into account the molecular vibrations of the reagents than by any other hypothesis. That the toxic action varies with the atomic weight among substances which have homologous spectra, is a fact which can be explained if we refer these biological reactions to molecular vibrations. Furthermore, the fact that these reactions arrange themselves among the catalytic actions is more readily explained in this way than by any other.

In the present knowledge of nervous vibration, and also of molecular vibration, which still remains hidden in the ultra thermic region of the spectrum, the relation between molecular vibrations and biological reactions must necessarily remain a simple hypothesis, but the beautiful discoveries of Deslandres upon the numerical relations which are found to exist between molecular vibrations in the spectrum, promise soon to enrich science with a new means of investigating the problems of kinetic physiology.

I have found a certain interesting fact which depends upon the molecular properties of the substances injected, in studying the biological action of a great number of inorganic compounds, when one injects them into the veins or the arteries of a living animal.

I have demonstrated a long time ago in a paper read before the Académie that the biological action of these inorganic substances was determined by the electro-positive element of the salt which was employed. I have since demonstrated that the biological action of these inorganic compounds is connected with the isomorphic relations of the elements; and that all the substances forming one isomorphic group have the same biological action, and that in each isomorphic group the intensity of biological action depends upon the atomic weight.

I now propose to call attention to certain interesting relations which exist between the atoms of the elements and the reactions which they cause in living matter. My experiments have been made with substances belonging to groups of elements which are monoatomic, biatomic, triatomic, and tetratomic.

Among the monoatomic elements I have studied the action of the salts of lithium, sodium, rubidium, argentine, caesium, and thallium; among the biatomic elements I have studied the action of the salts of magnesia, chromium, manganese, iron, cobalt, nickel, copper, zinc, cadmium, calcium, strontium, baryta, and lead; among the triatomic elements I have studied the action of the salts of aluminum, iron, gold, yttrium, cerium, lanthanum, erbium, and didymium; and among the tetratomic elements I have studied the salts of platinum, palladium, cerium, thorium, uranium, and titanium.

Among the elements which have the same atomic character, there are those which belong to different isomorphic groups. The biological action of these different elements is not the same in several respects, but one finds that the atomic character of an element is always an important factor as regards its biological action, or in regard to the number of organs upon which it acts.

Among the elements of which the salts have not the same atomic character, it is always that salt which has the highest atomic grouping of which the biological action is most extensive; this fact I have verified in comparing the action of the salts of thallium, iron, cobalt, and cerium. It is always the salt, of which the atomic composition is the highest, which has the most extensive biological action. The monoatomic elements when injected into the veins in physiological doses destroy life by acting upon the pulmonary arteries. They are able to circulate in the blood without giving rise to any pronounced action upon the nervous centers. Even if they be injected into the carotid artery so that they reach the nervous centers in a considerable state of concentration, they do not disturb at all the functions of the brain, of the medulla oblongata, nor those of the spinal cord.

The biatomic elements arrange themselves in two isomorphic groups, of which the biological action differs in many respects, but all the biatomic elements are distinguished from the monoatomic in this, that they cause more extensive biological reaction. The salts of the groups of magnesia and baryta destroy life by paralyzing the heart; meantime the magnesia group acts also upon the center of vomiting, and the salts of the group of baryta act upon the voluntary muscles, of which they maintain the irritability a long time after death. The triatomic elements have a biological action which is much more generalized; the respiratory vasomotor and inhibitory centers, as well as the cardiac ganglia, are all more or less affected. Besides, almost all these elements act upon the pulmonary arteries.

In experiments with the tetratomic elements, it was found that the action upon the nervous centers was extremely pronounced, especially upon the respiratory and vasomotor centers. The sensibility and the reflexes are abolished before the dose used is strong enough to arrest respiration; and all these elements cause contraction of the pulmonary arteries after injecting into the veins. The following is an epitome of the facts which we have just presented: The monoatomic elements act upon the pulmonary arteries; the biatomic elements act upon the centers of vomiting, and upon the muscles of the heart and those of voluntary motion. The triatomic elements act upon the respiratory, vasomotor and inhibitory centers; also upon the cardiac ganglia and the pulmonary arteries; the tetratomic elements act upon the respiratory, vasomotor and inhibitory centers; also upon the brain, the spinal marrow, the cardiac ganglia and the pulmonary arteries.

The foregoing facts permit us to establish another connection between the chemical constitution of the elements and their biological action. I have demonstrated the important role of isomorphism and of atomic weight in the actions upon the living tissue, and one is now able to consider the combination of the atoms as an important factor in the action of the inorganic substances in the tissues.

It is a remarkable fact that since the discovery of the law of periodicity chemists have endeavored to find the influence of the chemical constitution of the elements in reference to their physical properties without ever studying the relations between the chemical constitution and the biological action; nevertheless, these relations are very marked and easy to determine, and they might furnish an important assistance in the studies of molecular chemistry.

When Newlands published the law of periodicity he made the interesting observation that all the inorganic elements which are

found in organized bodies have atomic weights, which are less than 40. One may now add that all the electro-positive elements which are found in organized bodies are monoatomic and biatomic.

In a memoir which I presented to the Académie, in 1887, I have demonstrated that in injecting the salts of the electro-positive elements into the veins, or into the arteries, one finds that in proportion as the atoms augment in number, the number of the nervous centers upon which they react becomes greater.

In a recent communication made to the Académie by Rydberg, it is demonstrated that the electro-positive elements are the seat of one or more systems of harmonic vibrations, which in the monovalent elements are limited to a single system, but in the elements of higher value there may exist two or more systems of harmonic vibrations in the same molecule. This is a very important fact in regard to their biological reactions. I have already published some experiments which demonstrate the great difference of biological action of the salts of the same element when the value of the molecule is augmented; but since the observations of Rydberg permit us to view the question under a new aspect, I will now relate the more important phenomena which one observes after injecting into the blood the salts of thallium.

Here there are two classes of salts of the same element. In one class of the thallic salts the molecule presents one system of molecular vibrations, whilst in another class the molecule is the site of several systems of harmonic vibrations. I only reproduce the more important facts of these experiments; they have been published in detail elsewhere. If one injects into the jugular veins of a rabbit 0.090 gm. of the sulphate of thallium there occurs an arrest of the passage of blood through the lungs by the action of the salt upon the pulmonary ganglia. After some seconds the right side of the heart overcomes the obstruction, and the salt circulates through the entire body without giving rise to any symptom. The animal seems to be in a normal condition. A second injection of the same quantity of the salt arrests the pulmonary circulation, and the animal dies. One finds then the right heart full of black blood, and some drops of arterial blood are found in the left side of the heart.

By venous injection the salt only comes in contact with the more important nervous centers, while in a state of great dilution. To observe its action upon these centers one must inject the salt into the aorta. To do this, let the point of the syringe directed toward the heart enter the right carotid artery of a rabbit. One may then inject 0.040 gm. of sulphate of thallium, then at different times 0.080,

0.200, 0.280, 0.350 gm. without producing any action upon the nervous centers. One next injects 0.770 gm., and it is only then that the salt comes in contact with the pulmonary ganglia in a condition sufficiently concentrated to arrest the passage of the blood through the lungs; but there is needed ten times as much of the salt by arterial injection to cause death as by venous injection.

It would seem that the reagent with a single system of molecular vibrations does not meet in the more important nervous centers any system of vibrations which its own vibrations are able to reinforce or annul. It is only with the pulmonary ganglia that vibrations are found with which the salts of thallium are in close relation; and this is true for all the monovalent elements.

With other salts of thallium the phenomena are very different. Here one employs a salt of which the weight and molecular volume are much more elevated, and in which the molecule is the seat of several systems of vibrations. One may first inject 0.002 gm. of the nitrate of thallium into the jugular vein of a rabbit. After thirty seconds the animal loses power in its limbs, the respiration becomes slow, the pupils dilate, and the animal is in a state of torpor. After another injection of 0.007 gm. the animal falls upon its side and struggles, and the reflexes are exalted. Four minutes after the injection the respiration stops. One then finds the right side of the heart filled with blood, while the left side is empty, denoting pulmonary obstruction; the ventricles are contracted for twenty-three minutes after the auricles have ceased to act. This denotes action upon the cardiac ganglia.

In this experiment one finds the same action upon the pulmonary ganglia as that obtained with the thallic salts; but when the salt has traversed the lungs and circulated in the body, one finds that other nervous centers are affected by the salt, even in a state of great dilution, but these reactions upon the other nervous centers are more manifest after arterial injection. Now let there be injected 0.007 gm. of the nitrate of thallium into the aorta of a rabbit; after thirty seconds there is an augmentation of arterial tension from 100 mm. to 180 mm., indicating action upon the vasomotor center; the respiration is also slow; after one minute the arterial tension ranges from 170 mm. to 190 mm., with great oscillations, and two minutes after the injection breathing ceases without convulsions, as the result of direct action upon the respiratory center.

After death the contractions of the heart continue, and the arterial tension undergoes variations similar to those during life. Three minutes after the cessation of respiration the arterial tension in-

creases from 40 mm. to 100 m.m., and the phenomena are repeated three times before the heart stops, indicating action upon the vasomotor center; the contractions of the heart continues more than one hour after death; the rhythm of the ventricles and auricles is entirely different, denoting action upon the cardiac ganglia. The lungs are found hepatized through action upon the pulmonary ganglia. The contrast between the biological action of the two classes of salts of the same element could not be more striking.

With the salts of thallium of one system of molecular vibrations there is but one nervous center upon which its action is shown, whilst with the other salts of thallium, of which the molecules present several systems of vibrations, there is but one single nervous center which does not feel their action, even when they exist in the blood in quantities two hundred times less than the other salts of thallium.

I do not wish to insist upon that which can be inferred from these facts in regard to the functions of the nervous centers, but I believe that they demonstrate that the spectroscope is destined to play as important a part in physiological research as it does in chemistry.

ANTITOXIN THERAPY, WITH SPECIAL REFERENCE TO ITS APPLICATION IN DIPHTHERIA.

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That certain diseased processes are brought about by living microorganisms cannot in the light of modern research be doubted. The claim that bacteria are the result, not the cause of disease, is too absurd to demand argument. Science has also shown that bacteria act not directly, but by means of substances called toxins, which they secrete or elaborate from the media in which they grow. This is shown especially by the fact that the filtrate of a culture sufficiently old will usually produce all the phenomena that occur when the bacilli themselves are used.

If bacilli or their toxins are introduced into an animal's circulation in less than a fatal dose, such introduction renders the subject capable of resisting larger doses as soon as it has recovered from any reaction incident to such treatment. Thus by the injection of continually increasing doses of the poison a very high degree of immunity can be obtained, many hundred thousand times a fatal dose being in some cases injected without effect.

The serum of animals thus immunized, when injected into other animals confers a certain degree of immunity upon them, or even cures an animal previously infected, the amount necessary to be injected depending upon the quantity of toxin developed, which in turn is in proportion to the virulence of the infection, and the length of time elapsing between infection and treatment. Of necessity antitoxin is valueless once the toxin has wrought tissue changes incompatible with the continuance of life.

Nutall, Behring, Tizzoni, Cattani and others have shown that recently drawn blood serum has distinctly germicidal properties, and further investigation have demonstrated, that the blood serums of certain animals have specific bactericidal effects upon special bacteria. This action of the various blood serums has been used as a foundation to build a theory accounting for natural and artificial immunity, and the results of serum therapy.

But it alone will not explain the facts brought out in the study of antitoxin. Thus the serum of some animals, immune against certain diseases, is not germicidal to the bacteria producing them, and conversely, animals, whose serum is germicidal to a bacterium, may be very sensitive to the disease it produces. For instance, the dog is comparatively immune against anthrax, while his serum does not kill the bacillus anthracis; again, the serum of the rabbit, an animal very susceptible to anthrax, is germicidal in the presence of the anthrax bacillus. On the other hand, the serum of the rat and frog, both of which vigorously resist anthrax infection, have especial germicidal powers over the bacilli. Thus it would appear, that there may be in the blood of animals one or both of two substances antagonistic to the development of infectious diseases, one of which destroys the bacillus itself, the other prevents the progress of the disease in one of two ways: Either it so acts on the cells that they are able to resist the bacilli and their toxins, or it chemically neutralizes the toxins. The first of these substances has received the name alexin, from Buchner, the latter, the term antitoxin.

The doctrine of phagocytosis advanced by Metchnikoff, claims that the brunt of the warfare between organism and organized poison is carried on by certain of the white blood cells—the phagocytes—which act, principally, physically in directly antagonizing the microbes, but, partly, chemically by destroying the nocive power of the toxin. He believed that antitoxin acted by stimulating phagocytosis, and consequently preferred the name stimuline to that of antitoxin.

That the phagocytes directly destroy and devour some bacilli, at

least, can be readily proven by an interesting set of experiments with the bacillus of tetanus, described by Paul Gibier, in the *Therapeutic Review*, vol. iii, No. 3. If a culture of this bacillus 48 hours old, *i. e.*, before any toxins have developed, he injected with strict anti-septic precautions under the skin of a guinea pig, an animal very sensitive to tetanus, there will be no unfavorable result; and if we follow with the microscope the process taking place at the seat of injection we will find the bacilli and their spores surrounded by a rapidly increasing number of migratory leucocytes; the bacilli are gradually taken up by the cells until one may contain as many as 25 or 30 in a cell; the spores and bacilli in the cells now become less and less apparent and at length entirely disappear. If some means be taken to prevent the action of the phagocytes on the bacilli, such as the injection of some substance which opposes positive chemiotaxis, or bruizing of the tissues, thus lessening the resistance of the cells, or the placing of the bacteria in a sealed roll of sterilized filter paper, thus mechanically preventing the approach of the leucocytes, the production of the toxin will go on unchecked, and the symptoms characteristic of tetanus will be developed.

That the leucocytes are especially concerned in the manufacture of the defensive proteids that modify the effects of the toxin, may well be doubted. If, as seems probable, antitoxin has a certain direct action in increasing the resistance of the cells to the toxin, all the cells share in this influence and not the phagocytes alone.

The evidence is very strong that the antitoxin also acts largely by directly neutralizing the toxin.

To repeat, the whole process following an injection of antitoxin, seems to be as follows: The cells of the organism are enabled by some unknown molecular change to bear up against larger doses of the poison than is their wont, at the same time the toxin may be neutralized chemically—which of these two elements plays the greater part is still involved in controversy, though experimental evidence shows that each has some share in the result.

The cells of the organism, now proof against the weapons of the bacteria, have sufficient vitality to exercise another function they possess of throwing out, when irritated by the presence of living bacteria, a germicidal substance, such as above mentioned as being nominally present in certain serums, and now, with the assistance of phagocytosis, the bacteria are completely destroyed and eliminated. That this is not merely a fanciful hypothesis of the bacteriologist is shown by the fact demonstrated by Klein and others that the antitoxin produced by the injection of the Klebs-Loeffler bacillus has

distinctly germicidal properties, while that produced by the use of the toxin alone has little if any such power.

Four methods have been used to render animals immune to the various infections:

1. Injection of cultures whose virulence has been reduced by growing in an unsuitable medium; at each succeeding injection cultures of increasing virulence are used.

2. Injection of extremely small doses of virulent cultures. Quantity of dose gradually increased.

3. Injection of toxin alone in increasing quantities.

4. The introduction into the stomach of the toxin.

Although it is probable that the antitoxins resulting from the first two methods have distinctly germicidal powers which are lacking in those prepared by the third and fourth, nevertheless the third is usually considered the most satisfactory, as there can be injected a definite quantity of poison which will not increase after administration.

The following is Roux's method of manufacturing his anti-diphtheritic serum: A flat-bottomed Fernbach flask is filled with alkaline peptone-bouillon, sterilized and inoculated with diphtheria bacilli. The flask is then kept at 37° C. for three or four weeks. Finally, the cultures are filtered into a sterilized flask and standardized, *i. e.*, the quantity of the filtrate necessary to kill a certain weight of some animal, usually a guinea pig, is ascertained. Immunity in an animal—the horse being used exclusively—is brought about by injecting this toxic filtrate in gradually increasing doses until 280 c.c. are introduced. At this point the serum of the horse will have antitoxic powers such that one gramme will immunize 50,000 grammes of guinea pig against a fatal quantity of diphtheria bacilli.

Klein prepares his antitoxin serum by injecting a horse with attenuated diphtheria bacilli and their toxins; then large amounts of bacilli without toxin from solid culture are used. A rise of temperature follows, and a tumor appears at the seat of injection. When this tumor has become absorbed the horse is again injected. In three weeks the animal will bear two large agar cultures of bacilli.

Immunization by introducing toxins into the stomach has been successfully accomplished by Fraser, of Edinburgh, in working with snake poison. He found that one thousand times the minimum lethal hypodermic dose of the venom of the cobra de capello could be introduced into the stomach of animals without giving rise to symptoms; and he further demonstrated that a few hours or days after the administration of such a dose the animal had become

immune to the poison given hypodermically. The serum of such an animal had antitoxic powers.

Fraser points out that the snake charmers, who appear to be immune to the venom of the reptiles they handle, are in the habit of swallowing the poison glands of snakes that have been killed. He also relates the case of a Kaffir boy bitten by a poisonous snake, who was successfully treated by swallowing the venom of the slaughtered reptile.

Fraser believes, as the result of his experiments, that antitoxin acts by directly neutralizing the poison. He found that he was obliged to inject a much larger quantity of anti-venomous serum to protect an animal when injected before or after the poison. He argues that if the antitoxin acts by stimulating the resistant properties of the cells, it would take a less quantity if injected half an hour or more before. Again, if the anti-venom and poison were left together some time before injection the amount of the product necessary for protection was considerably less. As, however, the nature of neither the serpent's venom nor bacillary poisons is known, the propriety of applying conclusions to the one which have been drawn from experiments on the other, may be doubted, and the opinions of many of the observers working with antitoxin point to different conclusions.

The untoward symptoms following the injection of antitoxic serum appear to be due to substances combined in the normal serum of animals, and not in any way to the antitoxin itself, for the bad effects vary with the amount of serum used and not with the antitoxic strength. As this strength is being rapidly increased, thus allowing the injection of smaller amounts of serum, we may expect the few ill effects of serum therapy to be soon reduced to a minimum.

The most common of these ill effects, is a peculiar rash which usually develops between the tenth and fifteenth days, and which is accompanied by fever, pain, and swelling of the joints, etc., in varying grades of severity. This occurs after treatment with antidiphtheritic serum especially, and then only when the streptococcus is associated with the Kleb-Loeffler bacillus in the mouth and pharynx.

Two actions of foreign blood serum on the circulating blood have been cited by the opponents of serum therapy: (1) Its globucidal power. (2) Its coagulating power.

It has been proven that large amounts of the serum of one species of animal will, when injected into the blood current of another, destroy many of the red blood cells; but it hardly seems possible that the small amount injected for antitoxic purposes, can cause this effect in any appreciable degree.

J. S. Billings, Jr., of New York, made a series of examinations of the blood of healthy children, who had received immunizing doses of antidiphtheritic serum. In no case did he discover any alteration in the character of white or red blood cells, although in about 50 per cent. of the cases there was a slight diminution in the total number of red cells.

If the serum be injected into a vein of another species of animal, coagulation will follow, owing to the precipitation of fibrin. Richet and Hericourt, however, have shown that this result will not take place, if the injection is made into the cellular tissue, thus causing the serum to pass through the lymphatics before its entrance into the blood current. They have also demonstrated certain toxic properties of serum, shown by muscular pains, febrile disturbances, respiratory affections, and even fatal convulsions, and suppose them to be due to certain albuminoid bodies. These vary greatly toward different animals and with different serums. They are likewise only markedly present when the injection is intravenous, and are so slight as to be practically absent when the injection is into the subcutaneous cellular tissue. It has, therefore, been recommended that in making the injections the needle be introduced first. If no blood flows through it, it is known that no blood vessel is pierced and the barrel of the syringe may be screwed on and the operation safely completed.

The value of the serum treatment in antagonizing the action of the Klebs-Loeffler bacillus has, as in the case of many other bacteria, been definitely proved by experiments on animals. The conclusions based on such results must, however, be modified, though by no means negatived, by certain facts, when we wish to apply them to human therapeutics:

1. When working with animals infected in the laboratory, we accurately know the amount of the toxin or virulence of the culture injected.
2. We know definitely the length of time elapsing between infection and treatment.
3. The toxin brings about certain organic and functional changes which must be treated by appropriate remedies.
4. The life of the bacillus is not shortened by antitoxin.
5. We do not know the exact method of action of the antitoxin.
6. In the disease under consideration, other bacilli are frequently found associated with the Klebs-Loeffler, and they have considerable influence in increasing the gravity of the case.

In man we must judge the virulence and duration of the infection

from the symptoms and history. As we know, cases are not infrequent in which the organism seems to be suddenly overwhelmed by enormous doses of toxin, patients succumbing in 48 hours. Again, symptoms may be so slight that we doubt the diphtheritic nature of the disease—when no bacteriological test has been made—until some paralytic sequelæ decide the diagnosis. In neither case can we tell whether the severity or mildness of the attack is not due to great susceptibility of the cells in the one case, or to a certain amount of immunity or resistance in the other, irrespective of amount of toxin.

It is, therefore, necessary that we should, in every case, increase the resistance of the cells by stimulating and keeping up nutrition. We should always consider it probable that grave symptoms are due to large amounts of toxin and give the antitoxin in large and frequent doses until improvement sets in. As high as 20,000 units have been given to a child with nothing but benefit resulting. As we know and should expect from the probable *modus operandi* of the toxin, the antitoxin is usually of but little value after the third or fourth day, though many cases have been very successfully treated at a later period.

It is especially to the lack of considering the changes wrought by the toxin that much of the criticism applied to the serum therapy of diphtheria is due. It is expected that this treatment should work miracles, that as a specific it alone should cure the disease, and that the use of other remedies is equivalent to an admittance of weakness on the part of its advocates. What would we think of him who, in treating a case of mineral acid poisoning, stopped when he had succeeded in neutralizing the acid, paying no attention to organic and functional alterations brought about locally and systemically by the poison. In diphtheria similar conditions obtain. We have certain disturbances produced by the toxin of a bacillus. The antitoxin either neutralizes this noxious substance or so acts on the cells that they can resist its action. If taken early this alone would suffice; but, as we know, the action of the diphtheritic toxin may be rapid and marked, or slow and insidious, producing but slight symptoms, yet destroying nerve cells and so bringing on paralytic sequelæ, cardiac or otherwise; therefore, the injured organism demands aid from the therapist after the toxin has been rendered powerless for evil.

As before mentioned, stimulation and proper nourishment are most valuable. If intubation be performed, the danger of septic pneumonia becomes exceedingly great, 50 per cent. of the fatalities in this class of cases being due to it. To prevent this complication rectal feeding with predigested food should be resorted to.

The local treatment of the disease is extremely important, for the bacillus lives as long in the throats of those treated by antitoxin as in those of patients not so treated, and if it be not destroyed by local means the danger of infecting others is not abated.

Moreover, we do not certainly know the mode of action of the antitoxin, but if, as seems probable, it acts by stimulating the cells to increased resistance, it would seem that in certain cases the cells might be either so susceptible to the action of the toxin, or so depressed by large quantities of it, that they could not respond to the antitoxin, but would continue going further under the baleful influence of increasing amounts of the bacillary product. In such cases it is especially necessary to use such local treatment as will rapidly destroy the bacilli, and so remove the source of the toxalbumins.

It is well known that those cases of diphtheria in which the bacillus diphtheriæ is accompanied by other microorganisms are rendered more serious by the action of the toxins of the accompanying microbe. This is especially the case where the streptococcus pyogenes is present. If possible an antitoxin corresponding to the additional infection should be used, and in any event such a presence is still another argument for the continuance of local treatment.

Among the various antiseptics that have been used for the destruction of the Kleb's Loeffler bacillus, clinical evidence seems to favor the chloride of iron, especially when used in the form of the old tincture and so applied that its action shall be continuous. Its combination with the almost non-poisonous chlorate of potassium has received the sanction of men eminent in our profession as being especially efficacious. We are about to try some experiments in the University clinical laboratory to determine the value of the old tincture and its mode of action, and the results will be published at a later date.

Let us now see how clinical experience agrees with these theoretical deductions. The American Pediatric Society has collected the results obtained with antitoxin in private practice in 3,384 cases. In two-thirds of the cases the diagnosis was confirmed by culture. The balance showed sufficiently clear symptoms to allow of a certain diagnosis. All doubtful cases were excluded when recovering, but included when fatal. An unusually large number of severe cases are found in this report. Many of the physicians sending in their results with this treatment had not used it in their mild cases on account of the expense. Others had only used it when the onset gave warning of a severe attack. A large number had used it only when symptoms became alarmingly worse under other methods of

treatment. These various considerations will outweigh any error that might be due to great enthusiasm for serum therapy.

The result of the investigations in brief were as follows: Six hundred out of six hundred and fifteen physicians were strongly in favor of the treatment. Six hundred and thirteen were of the opinion that the disease was of about the same average nature and severity as in previous years.

Excluding cases moribund at the time of injection the mortality in 5,576 cases was only 8.8 per cent. In 4,013 cases injected during the first two days of the disease, excluding moribund cases, the mortality was 4.8 per cent. After three days the mortality rapidly rose, though striking improvement was seen in cases injected as late as the fifth or sixth day. Paralytic sequelæ were seen in 9.7 cases. This percentage is slightly in favor of antitoxin, Lennox Browne reporting a percentage of 14 in 1,000 cases, and Lanne 11 per cent. in 2,448 cases.

Three hundred and fifty physicians attested the marvelous power of the antitoxin in checking the spread of the membrane in laryngeal diphtheria. In 2,819 of them not operated upon the mortality was 11.3 per cent. If we exclude cases moribund at time of injection, the mortality was 9.12 per cent. In 533 intubation cases the mortality was 25.9 per cent. In 32 tracheotomies the mortality was 37 per cent. Excluding 66 of these operative cases, which were moribund when injected, the mortality is 16.9 per cent.

The report comprises these results with those formerly obtained. Thus McNaughton and Madden report 5,546 intubations with a mortality of 69.5 per cent. Browne, who has combined calomel fumigations, reported a mortality of 51 per cent. O'Dwyer's best 100 operations without serum showed a death rate of 73 per cent.; his first 30 with serum, 33 $\frac{1}{3}$ per cent. M. L. Naughton's last 72 without serum had a mortality of 66 $\frac{2}{3}$ per cent.; his first 72 with serum, 33 $\frac{1}{3}$ per cent.

Returning to the Pediatric Society's report proper, we find that 50 per cent. of laryngeal cases did not need operation; formerly only 10 per cent. recovered when not operated upon. Only 5.9 per cent. of the 5,794 cases developed broncho-pneumonia, and but 15 died from nephritis.

As to dosage, the Pediatric Society concluded that in all severe cases, 1,500 units should be given at the first injection to a child over two years, 1,000 units to one under that age. The dose in mild cases, for a child over two years, should be 1,000 units. If no improvement sets in the dose should be repeated in 18 to 24 hours.

A third treatment should be given if necessary. Other prominent authorities recommend a more frequent repetition of the remedy, *e. g.*, every 6 to 12 hours. The antitoxin should be given as early as possible, without waiting for a bacteriological diagnosis.

Chubbe and Litchfield, in the *Australasian Medical Gazette*, February, 1896, report 200 consecutive cases of diphtheria in hospital practice, the first hundred of which was treated with antitoxin, the second hundred without. All those injected within the first two days recovered. Albuminuria and paralysis occurred almost equally in the two series. The temperature usually declined after the first injection.

In the first series the throat was clear in an average of ten days; in the second in four days. Treatment, other than antitoxin, was the same in the two series. The bacilli persisted as long in the second series as in the first. The following table gives their results

	Cases.	Cured.	Died.	Death rate.
<i>First 100:</i>				
Tracheotomies	59	19	40	67.7
Simple diphtheria	41	30	11	26.8
Total	100	49	51	51
<i>Second 100:</i>				
Tracheotomies	48	29	19	89.5
Simple diphtheria	52	48	4	7.6
Total	100	77	23	23

H. Filatow (*Russian Archives of Path. Med. and Bact.*, January, 1896), gives the results obtained in 5,000 cases of diphtheria treated in Moscow by serum therapy. The mortality in this series was 18 per cent. He considers it necessary, as indeed do the majority of observers, to continue the local treatment. Albuminuria did not appear in greater proportion in these cases than under former methods of treatment.

Henig, of Königsberg (*Ber. klin. Woch.*, 1896, p. 383), thinks that the results obtained by serum therapy are not as good as those obtained by certain other special treatments, many writers asserting that their mortality is only 3 or 4 per cent., even when gangrenous and scarlatinal cases are included in their statistics. Thus his own cases, 1,927 in number, show a mortality of 3.06 per cent. His treatment consists in applications of lime water, permanent ice cravat, etc. Many other physicians claim equally good results with various chloride of iron mixtures.

Toddo (*Rif. Med.* July 11, 1896), has gathered statistics of 10,000 cases treated with antidiphtheritic serum, in 86 hospitals. The mortality in these cases was 18 per cent. Fifty-three hospitals gave

comparative statistics, comparing results of serum therapy with former methods. These give a present death rate of 20 per cent. as against 44.3 per cent. in the past.

Suérard has collected 3,760 cases treated in private practice, by the antitoxin. The mortality in these cases averaged 7.8 per cent.

After carefully considering these various statistics, taken from all sources, in all climes, and under all conditions, there can be little doubt but that the clinical evidence agrees with the experimental as to the remedial value of the diphtheritic antitoxin.

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THE MANAGEMENT BY THE GENERAL PRACTITIONER OF CASES DURING PREGNANCY AND NORMAL PARTURITION.

By R. A. FERGUSON, M.D., Bakersfield, Cal.

Read before the San Joaquin Valley Medical Society.

It is as the family adviser in the commoner affairs of health and disease that the general practitioner finds his best opportunities for usefulness. Of all classes of cases that come under his observation there are none of more importance than the general management of pregnancy and parturition. My object in submitting this paper is to elicit practical suggestions on this every-day subject.

Recent authorities on the subject insist upon the fact that the diseases peculiar to women during pregnancy and childbirth are largely preventable. This being the case, it behooves the general practitioner to exercise a careful supervision of, and to give such adequate instructions to, the pregnant woman that should any of these preventable diseases occur he may conscientiously feel that he has not been guilty of malpractice. But to follow out, in general practice, the close supervision laid down by these authorities is often impracticable; the physician would subject himself to the charge of making work for himself to his financial profit, and the woman would probably gain the impression that she was suffering from some serious disease. Zeal for the application in practice of scientific principles requires to be tempered by tact and a sense of the practicable.

When accepting an engagement for attendance upon a case of confinement, it is my practice to seek a personal interview with the patient at the earliest convenient opportunity. I then obtain in as matter of fact a way as possible a knowledge of her past health history and her present condition. If the patient is a healthy woman with the normal reasons for believing herself pregnant, I instruct her to live a methodical and regular life on the following lines:

1. To wear warm undergarments that cannot compress the abdo-

men or breasts; to suspend her garments from her shoulders, and to wear large low-heeled shoes and no garters. I recommend union suits, equivoise waists and worsted hose.

2. That personal cleanliness and the functions of the skin must be maintained. I recommend the warm bath to be taken at least twice a week, and the use of some germicidal soap, such as carbolic or hydronaphthol. For women accustomed to cold water, a cool sponge bath on rising is excellent. Hot or cold baths cause excitation of the vascular and nervous systems, and hence are objectionable. If a woman is not of an excitable temperament, and has not previously miscarried, sea-bathing, under proper conditions, and not carried to the extent of fatigue, will benefit both mother and child.

3. That a proper amount of exercise in the open air, such as walking, or light work involving no straining posture, is necessary. All straining postures of the body and severe exercises, like dancing, riding on horse or wheel, swimming, driving over rough roads, long voyages or journeys, lifting heavy weights, running sewing machines, and whatever produces great fatigue, exert an unfavorable influence on pregnancy, and are obviously to be warned against. The pregnant woman should be advised to be very deliberate in her movements; never hasty. A woman heavy with child is always awkward, and hence more liable to fall or otherwise injure herself.

4. That she should breathe at all times a pure air; that her living and sleeping rooms must be well ventilated, and that she should regularly sleep from nine to ten hours out of every twenty-four, and that during the latter part of pregnancy she should avoid lying upon her back.

5. That her diet should be plain and nutritious, and taken at regular intervals. The customary Sunday change in the meal hours should not be allowed. Within common sense limits, the whims and caprices of the appetite may be humored, but highly spiced foods and alcoholic liquors are best left out of the pregnant woman's diet. An excess of albuminous foods should be avoided.

6. That daily and regular evacuations of the bowels must be secured.

7. That though her condition is natural and physiologic, her emotional susceptibility will be increased, and that hence she must avoid all mental and bodily excitement.

8. To protect the breasts from pressure, and to daily cleanse the nipples with soap and water, and to apply to them an emolient of lanolin or cocoa butter with boric acid.

The pregnant woman should be earnestly and emphatically re-

quested to report to her physician any symptom which causes discomfort, and the nature of which she does not perfectly understand. Pregnant women are prone to believe that their condition is necessarily accompanied by many disagreeable features, and they frequently suffer, without complaint, except to some sympathetic, but ignorant female friend, from symptoms that were the physician informed of their presence, much discomfort could be avoided and many dangers prevented. Especially should she be requested to report severe pain or persistent feeling of discomfort or unnatural swelling in any locality of the body; vaginal discharges; persistent vomiting; obstinate constipation; any marked change in the quantity of the urine; persistent headache; any change in the eyesight; sleeplessness; persistent disagreeable dreams; alterations of consciousness; intense itching of the skin; numbness and tingling in the fingers; cramps in the calves of the legs; distress about the heart; shortness of breath. The patient should be requested to bring with her to each consultation a vial of her urine for examination.

If from the appearance and history of the patient any organic disease, pelvic deformity, or misplacement, or disease of intrapelvic viscera may be suspected, a thorough physical examination should be insisted upon and carried out; and in the latter months of pregnancy the strength and viability of the fetus and the position of the placenta should be ascertained when there is the slightest suspicion of trouble brewing.

During the last days of pregnancy the patient is directed to thoroughly bathe the pudenda and nates with warm lysol lotion each evening, and to take a hot hip bath with $\frac{1}{4}$ lb sodium carbonate dissolved in it when the earliest symptoms of labor set in, and to array herself in clothing that has been recently boiled.

For their confinement, my patients are instructed to have prepared by thorough cleansing and the removal of superfluous furniture, a well-aired room which can be made warm, and to have all articles of bed covering and body clothes, which come in contact with her person, boiled or steamed.

The general practitioner should aim to be as strictly aseptic in his cases of parturition as the gynecological specialist is in his cases of surgery. He must constantly keep before his mental vision the fact that the staphylococcus pyogenes does not originate *de novo* in the patient's body, but is introduced through the vagina, and hence its invasion and the consequent puerperal fever is preventable. He must see to it that he himself and his appliances are aseptic, and to the best of his ability, under given circumstances, insist upon the surgical cleanliness of his nurse, his patient, and her environment.

For attending on cases of labor, I keep a suit of clothes which will come to no harm by frequently passing through the steam laundry, for the sight of a surgeon's apron is too suggestive to the nervous patient of the popular notion of the surgical butcher. Before each examination I cleanse my hands as carefully as I would before putting my fingers into a laparotomy wound; after using the nail brush with soap and water, and rubbing with alcohol, I soak my examining hand in lysol solution. The slippery nature of this solution renders the use of other lubricator unnecessary. I touch the parts as infrequently as possible. In all cases I recommend an enema of soapy water to wash out the bowel.

After the second stage of labor sets in I prefer to place the patient on the left side with her knees drawn up and separated. By so doing the condition of the perineum and the progress of the third stage can be readily watched with the least exposure of the patient. Then, too, if any repair of the perineum is necessary, the patient is in a convenient position to proceed with it at once.

After normal labors I do not use vaginal irrigation.s I instruct the nurse to wash the parts thoroughly and as often as necessary with lysol solution, and to apply nothing but fresh pads of absorbent cotton. I prescribe capsules containing boric acid, or boric acid and iodoform, to be inserted into the pouch of the relaxed perineum several times during the 24 hours. The nurse is instructed to thoroughly cleanse her hands and to soak them in lysol solution before touching the parts, and to use only boiled water about the pudenda. The patient is advised to be raised in a sitting posture to urinate, in order to facilitate the evacuation of vaginal discharges

The temperature should be taken daily after every case of parturition; it gives the earliest warning of coming danger. In malarial districts a knowledge of the temperature during the week previous to parturition will assist the diagnosis between malarial and puerperal fevers after parturition.

The lying-in chamber must be kept quiet, clean and shaded. The mother must be guarded from disturbance and visitations, and the pernicious habit of exhibiting the baby should be objected to. Until the mother's bowels have been evacuated after her delivery I restrict her diet, afterwards I put her on her usual substantial food. I allow only water for the infant until the mother's milk is secreted. I recommend that the new-born infant be exhausted as little as possible by bathing and pressing, and I object to cinching the infant with unyielding flannel bands. The infant clothes, known as "Gertrude suits," greatly emancipate the baby from discomfort. The so-called

colic of babies is frequently due to improper dress rather than to faulty digestion.

The accouchement band I generally recommend; the support of it is a comfort to the mother; preferably it should be made of some yielding material and so formed as to fit the body. It is my practice to boil the ligature with which I tie the cord, and to dress the stump with a dry dressing of aristol and boric acid and hydronaphthol cotton. The eyes of the infant should be washed out with boiled water or boric acid lotion of suitable strength.

An efficient nurse is as much to be desired in obstetrical as in surgical practice. When a woman understands that the reason for the physician's instructions is to insure to her a more comfortable pregnancy and a safer childbirth she is generally very willing to comply with the directions.

THE TREATMENT OF PUERPERAL ECLAMPSIA.

By O. STANSBURY, M.D., Chico, Cal.

Read before the California Northern District Medical Society.

My object in presenting this paper is to give a brief review of the causes and best means of combating those convulsions that occasionally occur during or soon after the completion of gestation. In doing this I do not deem it necessary to go into detail of the various theories that have been advanced regarding the nature of the disease, or the opinions that have been set forth, from time to time, as to its treatment. I will attempt to give, in as succinct a manner as possible, what seems to be the accepted opinion regarding the nature of the disease at the present time, with the report of a case in practice.

Albuminuria has so long been associated with the disease, that its presence during the few later months of pregnancy, is a cause for anxiety on the part of the obstetrician.

According to modern views, uremia, which may be dependent upon functional or organic disease of the kidneys, or any obstruction to the free flow of urine through the ureters, plus an irritability or instability of the nervous system are the prime factors causing the disease. Local irritation, I am sure, plays an important part in some of these cases. It is a well known fact that febriculæ of infancy and early childhood, caused by disorders of digestion and tooth cutting, are at times attended with convulsions. Perhaps every physician present, has some family in his practice where the rule is, for some child to have convulsions whenever there is fever or disordered stomach. This must be due to some instability of the

nervous system, either inherited or acquired. It is but reasonable to assume that such a condition might also obtain in the pregnant woman.

The question naturally presents itself, how best to treat these cases. There are some rules that seem so well established that it is scarcely necessary to mention them. There are others that are still much mooted. When a patient presents herself in the last months of pregnancy, with her urine loaded with albumin, and with anasarca, which usually accompanies this condition, you should immediately put her upon an absolute milk diet (with some of the mineral waters, such as Napa soda or Apolonaris), some three or four pints a day. See that her bowels are kept freely open, and that her skin be made to act. If, with this treatment, the albumin does not diminish, and the edema and anasarca increases, and if the time of labor be some one or two months off, the question, and it is a very serious one, presents itself—Is it advisable to induce premature labor?

This is one of the mooted questions which should be settled, I think, by the general condition of the patient. Should her general health be good, and her spirits cheerful, we will be justified in waiting. Should the reverse be the case, I think the chances for both mother and child would be increased by acting promptly.

With the convulsions established, how are we best to meet the requirements of the case? Considering the complex nature of the disease and the various conditions that may exist, no routine treatment will answer in dealing with these cases. Chloroform, chloral hydrate, morphine, pilocarpin, veratrum viride, the bromides, all have their places, but should be kept there.

With convulsions followed by coma, it would be the worst possible practice to use morphine hypodermically, or chloral hydrate; here we have the reflexes all blunted, which either drug would surely increase; also in those cases where we have reason to suspect organic kidney trouble, morphine should no more be used than in other conditions. Where is the physician who would be bold enough to use morphine hypodermically in chronic Bright's disease? In convulsions without coma and albuminuria, morphine, chloral, and the bromides would be ideal remedies; pilocarpine can be used, I think, with advantage in those cases where there is profound poisoning due to inaction of skin and kidneys, but it should be employed with caution.

We have in veratrum viride a remedy that possesses great merit in properly selected cases. A writer in the *Therapeutic Gazette* of March, 1896, has this to say in regard to its action: "The method

by which veratrum viride is supposed to do good in cases of puerperal eclampsia is a double one. Chiefly from the action of its alkaloid jervine, it powerfully depresses the circulation and so bleeds the woman into her own blood vessels, relieving, by this means, the congestion of the cerebral and spinal vessels, and reducing, in all probability, any spasm of the renal blood vessels, which may be present, causing, thereby, marked increase in the flow of urine. In addition to this action, jervine also acts as a powerful sedative to the motor tracts of the spinal cord, and so directly quiets nervous excitation, while the copious sweating which often follows its administration, aids in relieving the blood of impurities, the kidneys of congestion, and relaxes peripheral blood vessels."

The method of administration, according to Hirsh, in the same article, is as follows: Fifteen drops of the fluid extract, hypodermically, for the purpose of reducing the pulse rate to 60, and if this fail to do good, he advises additional doses of 5 drops. Each should be administered with sufficient frequency to obtain this circulatory result. My experience with the drug has been limited, but in one case in which it was used, the results were so happy that I think a report of it may prove of interest here:

On March 17, 1896, a gentleman of Chico consulted me in regard to his wife, whom he stated expected her confinement in a month or six weeks. What had alarmed him was the swelling of her limbs and face. An examination of the urine was immediately made, and it was found almost solid. I placed her upon such treatment as was considered best, with the view of getting the kidneys and skin to do their full duty, with free purgation and hot air baths; after a few days of treatment and no improvement, the albumin seemed to diminish somewhat, but the anasarca increased. Notwithstanding all of this my patient was in good spirits and her general health seemed excellent.

The outlook in the case seemed so grave that I consulted Dr. W. A. Briggs, of Sacramento, in regard to it. Acting on his advice, I placed my patient on a strictly milk diet, with mineral water, and as the patient was one of the best, she followed instructions to the letter.

On March 27th pains set in, and after a very easy labor of about 2 hours, delivery took place. Everything progressed in the most favorable manner, patient complaining only of some slight headache. About 5 or 6 hours after delivery, she was seized with a severe convulsion; I was hastily summoned. These recurred at intervals of 40 to 45 minutes, until she had had five in all. Pilocarpin, $\frac{1}{8}$ gr., was injected soon after reaching the house, and everything

done to excite the skin and kidneys to act. Chloroform was used to control the seizures.

After consultation with Dr. Burk, whom I had called, I injected 15 minims of Norwood's tincture of veratrum viride, hypodermically. At the time the injection was made, the pulse was very rapid and moderately full. It soon came down to 70. There was great nausea and distress for a short time, for which nothing was done, but soon the skin and kidneys began to act in the most satisfactory manner. There was no return of the convulsions, and the veratrum was not repeated. The result obtained from the use of the drug left nothing to be desired. The kidneys and skin continued to act freely, and at the end of 3 or 4 days only a trace of albumin was found in the urine. The amount of urine passed was marvelous. The anasarca rapidly diminished. Convalescence was rapid and in every way satisfactory.

SHOCK AND ITS TREATMENT.

By G. A. WHITE, M.D., Sacramento, Cal., Superintendent Sacramento County Hospital.

Read before the Sacramento Society for Medical Improvement.

Every one, whether specialist or general practitioner, must now and again meet with cases of shock. Yet no one, I believe, has ventured to introduce this subject for formal discussion. This I now do because I am sure its prompt recognition, a full knowledge of its dangers, its prevention, and its successful treatment, will be the means of saving valuable lives. An effect and not a cause, a symptom and not a disease; we have to consider a condition and not a theory.

One hundred years ago, James Latta first used the word shock in its surgical sense. After him, Cooper, Guthrie, Traver, and others spoke of shock as an injury to the nervous system, causing death by reaction, and twenty-five years ago Billroth and Neudorfer wrote on this subject.

Shock, like inflammation and like fever, is a complex state that cannot be dismissed with a definition. Dunglison, quoting Copland, says shock is a sudden or instantaneous depression of organic, nervous, or vital power, with more or less perturbation of body and mind, passing either into reaction or fatal sinking, occasioned by the nature, severity, or extent of an injury, or by overwhelming moral calamity. Foster defines it as a sudden depression of the vital functions, especially of the circulation due to the nervous exhaustion

following an injury, or a sudden, overwhelming emotion, and resulting either in immediate death or prolonged prostration.

Warren states that the condition has been regarded as a general depression of the nervous system without any well defined idea as to what the change was. Mansell Moullin calls it a reflex paralysis or inhibition of the nervous system. Others speak of shock as an arrest of the heart's action due to reflex irritation of the pneumogastric nerve, or to a reflex vasomotor paralysis, whereby the abdominal vessels are hyperemic and the heart, brain, and other organs ischemic.

The "American Text-book of Surgery" says: "The primary constitutional symptom of a wound is shock. Shock is that condition of general vital depression which marks the immediate effect upon the individual as a whole, produced by the local wound. Its manifestations are through the nervous system, and are exhibited most markedly by a depressed action of the circulatory organs."

Weir Mitchell, in his "Injuries of Nerves," states that shock is commonly described as a condition in which the patient becomes cold, faint, and trembling; the pulse is small and fluttering; there is great mental depression and disquietude, and incoherence of speech and thought; the surface becomes covered by a cold sweat; there is nausea, perhaps vomiting, and relaxation of the sphincters.

A graphic clinical picture, by Warren, is the following: "A patient is brought into the hospital with a compound comminuted fracture, or a dislocation of the hip added to other injuries, where the bleeding has been slight. As the litter is gently deposited on the floor, he makes no effort to move or look about him. He lies staring at the surgeon with an expression of complete indifference as to his condition. There is no movement of the muscles of the face; the eyes, which are deeply sunken in their sockets, have a weird, uncanny look. The features are pinched and the face shrunken. A cold, clammy sweat exudes from the pores of the skin, which has the appearance of profound anemia. The lips are bloodless and the fingers and nails are blue. The pulse is almost imperceptible. A weak thread-like stream may be detected, however, in the radial artery. The thermometer, placed in the rectum, registers 96° or 97° F. The muscles are not paralyzed anywhere, but the patient seems disinclined to make any muscular effort. Even the respiratory movements seem, for the time, reduced to a minimum. Occasionally the patient may feebly throw about one of his limbs, and give vent to a hoarse, weak groan. There is no insensibility (coma is not observed in shock), but he is strangely apathetic and seems to

realize but imperfectly the full meaning of the questions put to him. It is of no use to attempt an operation until appropriate remedies have brought about reaction. The pulse, however, does not respond; it grows feebler, and finally disappears, and this 'momentary pause' in the act of death is soon followed by the grim reality. A *post-mortem* examination reveals no visible change in the internal organs."

The two principal theories as to the nature of shock are based on certain functional disturbances of the vascular and nervous systems respectively. The heart's action is weakened, thereby accounting for the irregular, weak or absent pulse and pale skin. Cerebral anemia intensifies shock and produces vomiting. The subnormal temperature is explained by the diminished blood pressure, the retarded flow of the blood, surface radiation and consequent loss of heat.

Many surgeons regard shock as a sort of heart failure, a temporary paresis of the muscles of the heart. Leyden ascribes the phenomena of shock to a powerful irritation directly upon the cord or indirectly through peripheral sensitive nerves, by which a profound molecular disturbance is produced in the nerve tissue.

Shock may be of any degree of severity, from the mild, scarcely appreciable, disturbance of the mental forces to the most profound depression and death. The pathology of shock cannot be determined by the ordinary methods of research. In such cases death leaves no change observable in the tissues. The phenomena of shock must be accepted as the measure of the ability of the individual to resist hurtful influences from without. Writers speak of local shock, secondary or delayed shock, and insidious shock.

Age, sex and temperament modify the manifestations of shock. The young react more quickly than the aged. Women are less susceptible to its influence than men. The phlegmatic and lymphatic temperaments resist shock better than the sanguine and nervous. The mental state modifies shock; fear, despair and despondency aggravate it; hope, joy and cheerfulness diminish it.

Chief among the causes of shock is trauma. The degree of shock is usually, though not always, measured by the magnitude of the injury. Compound fractures, penetrating wounds of cavities, involving important viscera, extensive burns, and blows upon the neck, stomach or testicles produce profound shock.

Innumerable cases of fatal shock from minor injuries are recorded, while instances of death from fright alone are not wanting. Susceptible individuals have been literally scared to death, and it is our daily experiences to see pain excite shock.

Operative surgery has a long score of shock charged to its account, and therefore in the prevention of shock from this cause the surgeon should invoke his best skill. Protracted operations, especially when within the abdominal cavity, are many times followed by disappointing and deadly shock. Long exposure to the air causes the peritoneum to give out animal heat, and the temperature becomes rapidly and dangerously lowered. Richly supplied as are the intestines with sympathetic nerves, their rough handling always excites shock.

Prolonged and profound anesthesia by its secondary effect upon the circulatory system produces shock. It diminishes the force as well as the frequency of the heart beats; it relaxes the large abdominal vessels, destroys their elasticity and tone, reduces the blood pressure to a minimum, and the vital stream flows slowly along its course. The brain, lacking its accustomed supply of blood, becomes anemic and the nerve centers sleep. Vasomotor paralysis, the essential factor of shock, holds full sway.

What shall we do to avert the dangers of shock when a bruised and maimed man or woman lies before us? The patient tosses wildly and vaguely from side to side as if frantic, complains of a fearful oppression and a want of breath, with presentiments of death and a feeling of total annihilation. Shouting again and again the same thing, encouragement is not of any use, he passes into a state of delirium, a dusky flush spreads over the cheeks, the eyes are sunken, the pulse becomes intermittent, jactitation is evident, then comes a condition of exhaustion, which is followed by death.

We have all witnessed such scenes, and whoever does so without due appreciation of their gravity and of his own responsibility must possess an iron frame and a heart of stone. In shock, as in many other things, "an ounce of prevention is worth a pound of cure." Differing in no essential element from shock following injury, the principles of treatment being the same, the shock of operation will alone be considered. Cold, heart failure, and nervous exhaustion are always present in shock. The rational treatment, therefore, must include measures to counteract these influences. To apply heat, to check hemorrhage, to stimulate the heart, and to promote nervous and mental rest is plainly indicated.

In connection with prevention, operations should, if possible, be held in a well warmed, well ventilated, and well lighted operating room. The room should be well warmed so that necessary exposure of the patient may cause a minimum loss of heat. Bags or bottles of warm water should be at hand and be applied to the body and extremities whenever the operation is prolonged. At its conclusion

the patient should be gently placed in a bed already well warmed and comfortably covered by blankets. To aid the weakened heart the foot of the bed should be kept raised until reaction is complete. Hemorrhage is to be prevented, where possible, by dividing vessels between clamps, by prompt seizure of bleeders, with suitable artery forceps, by ligature, by hot water, and by other well known methods.

The reliable therapeutics of heart failure are to be found in morphine, atropine, digitalis, strychnine, and whisky. In skilled hands these will do about all that can be done. A full dose of morphine and atropine should be given a half hour before anesthesia. This will sustain the heart, quiet the nerves, and induce a calmness well calculated to carry the patient safely through the ordeal. Should the operation be protracted the following should be given hypodermically every half hour, or whenever the pulse begins to flag: Strychnine, gr. $\frac{1}{20}$; tr. digitalis, gtt. xv; whisky, $\mathfrak{z}$ i. At the close of an operation, or sooner if alarming symptoms of shock develop, an injection *per rectum* of two or three ounces of whisky in a quart of hot saline solution should be given. A pint or more of warm saline solution thrown into the cellular tissues of the axilla or chest fills the vessels, stimulates the heart, and relieves the shock due to exhausting hemorrhage. Nourishment must not be overlooked; nutritious fluids should be early thrown into the rectum if the stomach, as usual, refuses to perform its functions.

In conclusion, I wish to again call attention to the important element of time as a shock producer in surgical operations. Since asepsis has superceded antisepsis, and surgical *technique* has thereby been simplified, should we not attempt the speed of our fathers, and in the language of Cheever, consuming minutes instead of hours in operations.

530 J street.

DEPARTMENTS.

OBSTETRICS, GYNECOLOGY AND PEDIATRICS.

By WALLACE A. BRIGGS, M.D., Sacramento, Cal., and

WM. FITCH CHENEY, B.A., M.D., Adjunct to the Chair of Obstetrics and Diseases of Women and Children, Cooper Medical College, San Francisco, Cal.

The Duration of Infection in Whooping-Cough.—WEILL, who in 1894 expressed the opinion that whooping-cough is contagious only during the premonitory catarrhal stage, has since put his opinion to the test (*Lyon Méd.*). On various occasions he permitted nearly 100 young children, who had not previously suffered from whooping-cough, to be associated in the same ward for twenty days or more with children suffering from the disease during the stage of whooping. In only one case was the disease contracted, and in this

instance the patient from whom the infection was derived was in the very earliest period of the whooping stage. In three small epidemics Weill was able to satisfy himself that infection was contracted from children who had not yet begun to whoop. He concludes that infection ceases very soon after the characteristic whoops commence, and that, therefore, in a family it is not the patient who is already whooping, but his brothers and sisters who have not previously had whooping-cough who ought to be isolated.—*British Medical Journal*, May 22, 1897.

Rapid Death after Labor from Infectious Meningitis from the Pneumococcus.—CROUZAT (*Rev. Obstét. Internat.*), communicates a case of death occurring soon after labor from an unusual cause. The patient had presented no abnormal symptoms in pregnancy; her confinement (the twelfth) and the first day of the puerperium were also physiological. Without any premonitory symptoms she passed suddenly into a state of coma, and in less than 24 hours she was dead. The urine examined at the time of labor was free from albumin. The following was the history: Two days after her confinement she complained of pain in the head, and after a few slight convulsive movements became comatose. The urine now contained a small quantity of albumin, but this soon afterwards disappeared again. The head was turned backwards, she kept grinding her teeth and biting her tongue, and the limbs showed some degree of contracture. The lower extremities showed diminished sensibility on the left side, but hyperesthesia on the right. A purgative was ordered; inhalations of oxygen, ice to the head, and injections of caffein and ether were given. The diagnosis rested between meningeal hemorrhage and slowly progressing tuberculous meningitis. There was marked inequality of the pupils, and the *tache meningitique* of Trousseau was very apparent. Death followed in a few hours; and at the necropsy the kidneys were found to be normal, but the meningeal vessels were greatly congested, and although there were no hemorrhages, all the cerebral vessels beneath the pia mater at the base of the brain were marked out by tracks of pus. There was no trace of tubercle. There were old adhesions between the left lung and the pleura. The pus contained the pneumococcus of Talamon-Fraenkel and no other microorganisms. The subcutaneous inoculation of a rabbit with the pus caused death by septicemia in 48 hours. The author can give no explanation of the source of the pneumococcus.—*British Medical Journal*, May 22, 1897.

Manual Rectification of Faulty Head Positions.—FRY (*Amer. Journal of Obstetrics*, March, 1897), in a paper read before the Washington Obstetrical and Gynecological Society, advocates, in the strongest terms, the manual rectification of faulty head positions. "Let us recognize the fact," he says, "that tardy labors can be terminated speedily and successfully by other means than by forceps." Special reference is made to cases of occipito-posterior and other faulty head positions, where the woman is suffering from impaired vitality or chronic disease, in which case a prolonged second stage, with forcible contractions, is much to be dreaded. Numerous rules are given for the rectification of the various malpositions, differing according to the degree of descent of the head, viz: above the superior strait, in the pelvis, or at the outlet. Certain rules are common to all cases. The patient should be anesthetized, placed on the edge of the bed, with thighs and legs flexed, thorough aseptic and antiseptic precautions observed, and the hand introduced during the absence of a contraction. All manipulations above the brim must be accomplished in the

interval between the contractions, while those in the pelvis, or at the outlet, during a contraction. (1) When above the brim or slightly engaged: In occipito-posterior positions the head should be raised by upward pressure on the forehead, which also causes flexion, then grasped and rotated forward. In cases with small heads and roomy pelves it is possible sometimes to change occipito-posterior into mento-anterior, and mento-posterior into occipito-anterior positions. Brow and transverse presentations are treated on the same principle. Face presentations are changed by raising the head, pushing up the forehead, and drawing down the occiput. (2) When within the pelvis: Occipito-posterior or face presentations, by the aid of anesthesia and posture, either the knee-chest or Trendelenburg, the head may be disengaged and treated in the same way as above. In desperate cases he advises symphyseotomy to allow room for the necessary maneuvers to change it into a vertex position. (3) When at the outlet: The manipulations are the same as when well down in the pelvic cavity, though with much greater hopes of success.—*Medical News*, June 5, 1897.

SURGERY AND ANATOMY.

By T. W. HUNTINGTON, B.A., M.D., Surgeon Southern Pacific Company's Hospital, Sacramento, Cal., and

GEO. B. SOMERS, M.D., San Francisco, Cal.

Prolapse of the Rectum.—BULLARD describes the following method of operating as performed by Kelsey: "After taking great care to cleanse the mucous membrane and neighboring parts by scrubbing and irrigation with bichloride solution (1:500), the whole extent of the prolapsus was pulled down and held out with two or three artery forceps, while the bowel was plugged above with iodoform gauze. A circular incision was then made around the anterior half of the tumor, completely through the gut, just at the mucocutaneous junction. After bleeding vessels had been secured with artery forceps, the flap thus made was dissected down to the apex of the tumor. The posterior half of the tumor was next surrounded by a similar incision, and this flap also dissected off as far as the apex. Taking the two flaps thus formed in the hand, and making gentle traction, the dissection was next carried upward into the apex of the tumor till a point was reached which, after amputation of the piece thus dissected loose, would allow of approximation of the cut edge remaining to the skin incision without too great traction, and without redundancy of tissue. The gut was then amputated by a circular incision, the cut edge being kept from retracting with artery forceps. After removal of the rectum there still remained a large mass of connective tissue and fat to be removed, this being especially the case in front, and in removing this the peritoneum was freely opened. The peritoneum was closed with fine catgut. The cut end of the rectum was united to the skin incision with interrupted catgut suture. The length of rectum amputated was five inches."—*New York Medical Journal*, November 7, 1896.

Gold Foil in Cerebral Surgery.—DR. BEACH describes a case of head injury which was followed by severe epileptic convulsions. In operating for relief he found that a tough cicatrix firmly united the brain and bone. In order to prevent readhesion, he inserted a piece of sterilized gold foil (No. 60, dental) enough larger than the opening to be retained in place against its bony edge by the pressure of the brain from beneath. In the case reported gradual improvement was noted. While it is yet impossible to determine the nature of

the principle, owing to the limited number of operations where it has been used, no unfavorable report from its employment have been reported. The recorded cases are encouraging in the direction of a procedure that, without delaying union or adding to the common risks, protects the brain from injury and protrusion during and after healing, and provides against such well recognized sources of brain irritation as the adhesions that may follow any case of compound skull fracture or its equivalent by operation.—*Boston Medical and Surgical Journal*, March 25, 1897.

The Importance of a Minor Point in the Anatomy of Femoral Hernia.—MOLLOY details three cases where the diagnosis of a femoral hernia was complicated by the enlargement of a lymphatic gland. In reference to this gland, Quain says that it is constantly placed in the crural ring; Gray, that it occasionally fills the interval between the femoral vein and the inner wall of the sheath. Erichsen speaks of the canal as usually containing a gland or two, while Treves draws attention to the fact that an enlarged gland over or about the hernial sac often complicates matters.—*Lancet*, February 27, 1897.

OPHTHALMOLOGY, OTOTOLOGY AND LARYNGOLOGY.

By WM. ELLERY BRIGGS, M.D., Sacramento, Cal.

The Bacteriology and Treatment of Catarrhal Ophthalmia.—DR. SIDNEY STEPHENSON, in a paper on the bacteriology and treatment of catarrhal ophthalmia, gives a history of the discoveries of the bacteria that have been found by the various investigators. In 1883 Koch discovered two microbes in the secretion in cases of Egyptian ophthalmia—one was associated with the severe and the other with mild forms of the disease. JOHN E. WEEKS described, in 1896, well defined bacilli that were always found in the secretion from catarrhal ophthalmia. The inoculations with the bacilli were not uniformly successful when the pure cultures were placed in the human conjunctiva and failed in animals. It is the uniform opinion of the numerous investigators that catarrhal ophthalmia invariably coincides with the presence of a small specific bacillus. The author has found a short bacillus in three types of acute conjunctival inflammation: (1) Classical catarrhal ophthalmia. (2) A form associated with large phlyctenulæ in and about the conjunctiva—the “pustular” or “aphthous” disease of the older writers. (3) A variety in which follicular enlargement is superadded to signs of acute inflammation. Only once had the author found the micro-parasite under other circumstances, namely, in a child with chronic dacryocystitis. In relapses of catarrhal ophthalmia the bacilli are usually found in great numbers. The following conclusions are drawn from the knowledge of the organisms of catarrhal ophthalmia: (1) The bacilli are to be found at some stage in every case of catarrhal conjunctivitis, and constitute the only certain diagnostic of that disease. (2) Their number stand in direct relationship to the severity of symptoms. (3) They are difficult to grow upon artificial media, and are readily killed by antiseptics, drying, or perhaps by mere lapse of time. The diagnosis should be based not upon the naked-eye characteristics of the secretion, but upon the organisms contained in that fluid. If gonococci be present we are dealing with a specific purulent ophthalmia, whereas if the bacilli described above be found, we have to do with a specific muco-purulent, or catarrhal ophthalmia. Nitrate of silver has been found to be a sovereign remedy for catarrhal ophthalmia. The acute symptoms usually subside after

three or four applications. The earlier nitrate of silver is used the better, after one is sure of the diagnosis. A 2 per cent. solution is the best strength. The silver solution is not contraindicated, even in ulceration of the cornea. The action of the solution should be limited as far as possible to the mucous lining of the lids by first everting them and the secretion carefully wiped from the conjunctiva. The silver solution should be used until the swelling and redness of the conjunctiva have subsided, and the yellowish white discharge has yielded to a scanty morning secretion containing no bacilli. As a wash for cleansing purposes nothing succeeds better than $\frac{1}{8}$ of a grain of corrosive sublimate and 1 grain of ammonium chloride to the ounce of water. The lids should be prevented from adhering by the application of lanolin to their edges at bedtime. When the acuter symptoms have subsided the silver can be replaced by some stimulating lotion as follows: Two grains of lapis divinus and 30 minims of laudanum to the ounce of distilled water. Sulphate of zinc or alum—1 to 3 grains to the ounce—do well in some cases. The author prefers the yellow lotion of the Austrian pharmacopeia, which is prepared as follows: Ammonium chloride 0.5 parts, zinc sulphate 1.25 parts, dissolved in 200 parts of distilled water. Next, camphor 0.4 parts is dissolved in 20 parts of absolute alcohol, and 0.1 part of saffron added to it. The two solutions are thus mixed, allowed to stand over night and filtered. This solution should then be dropped over the everted lids twice daily. The eyes as a rule should not be bandaged, but should be shaded.—*Lancet*, June 5, 1897.

DERMATOLOGY, SYPHILIS AND VENEREAL DISEASES.

A New Test for Seminal Fluid.—The recognition of spermatozoa in medico-legal researches is often a matter of considerable difficulty, especially if the material under examination is of old date. Great interest consequently attaches to the test for semen devised by FLORENCE, of Lyons, which has recently been reproduced in the *Boston Medical and Surgical Journal*, in conjunction with a confirmatory test due to the ingenuity of DR. W. F. WHITNEY. Florence's test comprises the use of a reagent often made use of in testing alkaloids, and is known as the tri-iodide of potassium. The test solution contains 1.65 parts of iodide of potassium, 2.54 parts of pure iodine, and 30 parts of distilled water. A drop of this solution, placed side by side on a slide with a drop of fluid obtained by moistening the seminal stain, results in the formation of a number of characteristic brownish-red pointed crystals, rhomboidal in shape, and presenting a certain resemblance to hemin crystals. DR. WYATT JOHNSON, who has carried out some investigations with this test, reports that he has been enabled to obtain the reaction with stains upwards of 12 months old, and not only is the reaction not obtained with other organic secretions, but even the semen of animals gives a much less marked reaction. In the same journal Dr. W. F. Whitney confirms the value of the test, which, however, gives a precipitate with alkaloids, and he suggests another test, which may be used in conjunction with the foregoing. A drop of fluid obtained from the moistened stain is evaporated on a slide, and fixed by heat in the usual way. The resulting film is then stained with eosin and methyl green, when it will be seen that the head of the spermatozoon is stained at the base of a deep green color, while the anterior part and the tail stain red. This staining reaction is well marked only in human semen, so that a possible source of error is obviated.—*Medical Press and Circular*, June 2, 1897.

The Bacteriological Diagnosis of Leprosy.—JOHNSTON and JAMIESON (*Montreal Medical Journal*), relate three cases showing the value of the bacteriological diagnosis of leprosy for public health purposes. The method adopted and now advocated for this purpose is exceedingly simple. A cover slip is smeared with a drop of the serum obtained by scraping one of the leprosy nodules. This is stained with carbol-fuchsin and decolorized with sulphuric acid and methylene blue (Gabbett's fluid). It may then be examined under the microscope in the ordinary way. This simple method appears to be eminently adapted for the examination of any doubtful case of skin disease where leprosy is suspected. If it be present the bacilli are certain to be found in large numbers in cover slips prepared in the above manner. The microscopic resemblance between the leprosy and tubercle bacilli should not form a serious source of error, as in tuberculous lesions of the skin the bacilli are always very scanty, and usually only a few are found in the entire cover slip; but in lepra each microscopic field shows enormous numbers of them. The lepra bacilli also readily stain by the simple aniline dyes, while tubercle bacilli do not. In choosing a nodule from which to take the specimen, it is desirable to select one in an early stage of development, before much scarring has taken place.—*British Medical Journal*, June 5, 1897.

MATERIA MEDICA AND THERAPEUTICS.

By WM. WATT KERR, M.A., M.B., C.M., Professor of Clinical Medicine, University of California, San Francisco.

The Radical Cure of Epithelioma by Arsenious Acid.—The operative treatment of cancer has always been felt to be only a *pis aller*, often dangerous in its application, and always uncertain in its results. The fact that it has, up to the present, remained the only measure at our disposal is conclusive evidence of the inadequacy of our therapeutical resources. It is not that other methods of treatment have been wanting, but without exception, they have failed to fulfil the more or less sanguine anticipations of their discoverers, and have consequently fallen into oblivion. Among the numerous remedies recognized in the treatment of cancer at various periods of the history of medicine, arsenic is certainly one of the most ancient. It has been tried internally, and as a local application, but even the temporary improvement occasionally observed by BILLROTH has not been obtained by other, equally trustworthy, observers. We are, however, asked by ZCERNY and TRUNECK, of Prague, to reconsider the use of this drug as a topical application in cancerous ulcer, and in an article published in the last number of *La Semaine Médicale* they certainly adduce results which appear to merit our attention. Their first attempts, with arsenic in powder, proved abortive, the thick scab which immediately formed effectually preventing any further action on the diseased tissues. They ultimately decided to make use of a solution of arsenious acid in equal parts of rectified spirit and water, of the strength of one part of the acid in 150 of the menstruum. So far, their observations have borne exclusively on ulcerated superficial growths, the histological structure whereof could be demonstrated by microscopical examination. The first step is to thoroughly cleanse the sore by vigorously rubbing or scraping the raw surface. The effusion of a moderate quantity of blood is a desideratum, it being indispensable that the remedy should come into contact with the tissues in presence of freshly-exuded blood. The surface of the ulcer is then thoroughly moistened with the solution, shaken up before using, and

allowed to dry, preferably without dressing of any kind. Some pain usually follows the application, but not of intolerable severity. A scab forms, over which the solution is applied daily. By-and-by the margins of the scab tend to separate from the subjacent tissues, and the treatment is continued until the scab is only retained in place by a few loose adhesions. These are divided, and the scab removed. A fresh application of the arsenical solution is made, and if, on the day following, the resulting scab is thin, of a light yellow color, and easily detachable, it indicates that the tissues no longer comprise any trace of cancerous growth. If, on the other hand, a dark colored, firm, and closely adherent scab again forms, the whole treatment must be repeated. The thicker the resulting scab the more energetic should be the treatment; that is to say, the stronger should be the solution, the strength of which may then be increased from 1:150 to 1:100, or even 1:80. When the desired result has been attained, there remains a granulating wound, covered with a delicate white pellicle, to be dealt with on general principles. The formation of cicatricial tissue may be minimized by the application of boracic acid ointment along the margins of the ulcerated surface. The duration of the treatment varies from three to four weeks to as many months, according to the depth and extent of the lesion. The procedure which we have described appears to be especially applicable in cases of cancer of the skin not associated with glandular enlargement, and perhaps also in cancer of the tongue, in which the prognosis is so unfavorable and surgical treatment so unsatisfactory. The authors believe that the effect of the treatment is in part due to the alcohol, and they attach special importance to the presence of fresh blood on the ulcerated surface when making the first application. The remedy is a simple one, and admits of ready trial, and in view of the results which they are enabled to place on record the suggestion will doubtless receive in this country the attention which it appears to merit.—*Medical Press and Circular*, May 26, 1897.

MEDICINE AND PATHOLOGY.

By ALBERT ABRAMS, M.D., Professor of Pathology, Cooper Medical College, San Francisco.

On Certain Features in the Prognosis of Pnenmonia.—OSLER claims that pneumonia is the most fatal of the acute infections of adults in temperate climates. No other disease kills from one-fourth to one-third of all persons attacked. Of the first 124 cases of croupous pneumonia admitted to or developing in the Johns Hopkins Hospital, 37 died, a mortality of 29.8 per cent. The mortality which he has seen among the cases with physicians is at least 50 per cent. The circumstances influencing prognosis, are: age, race and habits, degree of lung involvement, fever complications, etc. The old are likely to die, the young to recover. Above 60 years of age the death rate may reach 80 per cent. The disease appears to be more fatal in the negro than in the white. Victims weakened by alcoholic excesses fall an easy prey to the disease. Apart from certain complications, the fatal event in pneumonia may result from a gradual toxemia or from mechanical interference with the respiration and circulation. Toxemia is the important element in the disorder, to which, in the majority of cases, the degree of pyrexia and the consolidation are entirely subsidiary. The sudden and unexpected deaths in pneumonia may be attributed to the action of a specific toxin on the heart centers, rather than on the muscular substance of the organ itself. This seems more reasonable than the former idea that it was the action of the high fever upon the myocardium. Quite serious collapse symptoms may

occur early in the disease, even within 24 hours. Mechanical interference with respiration or circulation is a very much less frequent cause of death. The interference may be the gradual exclusion of the air, by the filling up of the follicles, or the capillaries in extensive territories, may be compressed. Very large areas of the breathing surface may be cut off without seriously disturbing the cardio-respiratory mechanism. The toxemia outweighs all other elements in the prognosis of pneumonia; to it (in a gradual failure of strength, or more rarely in a sudden death), is due in great part the terrible mortality from this common disease, and, unhappily, against it we have, as yet, no reliable measures at our disposal.—*American Journal of the Medical Sciences*, January, 1897.

The Pathology and Treatment of Gout.—F. LEVISON believes gouty affections to be caused by an accumulation of uric acid in the blood, dependent on insufficient excretion by the kidneys. It is proved by autopsies that the kidneys of arthritic patients are almost always in a state of granular atrophy. This condition is produced by hereditary disposition, by lead poisoning, or by continued irritation of a mechanical order, especially by the deposition of uric acid crystals in the tubuli of the kidneys. The greater proportion of arthritic individuals have formerly suffered from uric acid gravel, and are only later in life affected with gout. The treatment of uric acid gravel should not be merely limited to the treatment of the renal colic, but should be continued as long as the urine still deposits sand, or even microscopic crystals of uric acid. This treatment is the best prophylactic of gout. In the treatment of gout, none of the new patent medicines, such as piperazine, have been of use, but in 15 cases, of which the particulars are given, the author has successfully employed the dielectric method introduced by Edison in 1890, and further developed by Labatut, of Grenoble. In this method the affected articulation or limb is placed in a 2 per cent. solution of chloride of lithine, made alkaline by some caustic lithine or carbonate of lithine, while another portion of the body (hand or foot) is placed in a weak solution of common salt. Two electrodes of coal are placed in the two solutions, and the anode made to communicate with the solution of lithine and the cathode with the solution of salt. A current of 20 to 25 milliampères is employed for 30 minutes every day. Labatut has proved by ingenious experiments that lithine can thus be carried with the current through the skin into the body, and that it enters by the anode; after a treatment of some days lithine is found in the urine. Of the 15 patients treated by Levison in this way, 11 sufferers from chronic gouty affections were greatly benefited; the function of the joints in particular was almost always quite restored, or much improved, even if the stiffness and pain had existed for years. The author gives particulars of cases in which patients had been for years unable to make use of a knee or a hand, and were able, after a treatment of three or four weeks, to take long walks without any pain, or could use their hands for sewing, writing, or even playing the piano.—*Universal Medical Journal*, February, 1897.

Observations on the Excretion of Uric Acid in Epilepsy.—A. HAIG (*Brain*, vol. lxxiii, Part 1), is of the opinion that paroxysms of epilepsy are provoked by an accumulation of uric acid. In fact, he found in the examination of a particular case that the excretion of uric acid was diminished before and increased after an attack (0.1 per cent. uric acid). He observed a cessation of epileptic attacks after a milk diet, whereas a diet of meat always increased the paroxysms.—*Centralblatt f. innere Medicin*, March 13, 1897.

The Phonendoscope.—This instrument according to AUFRECHT is of no special importance when we desire to auscultate sounds and murmurs produced in organs. For the purpose of determining the size of organs it may be employed to advantage. For the latter purpose he used the friction method, which consists of drawing the finger over the skin surface during auscultation. In emphysema it is practically impossible to determine the size of the heart by the conventional methods. With the phonendoscope this is possible, in fact, one can exactly determine the size of the heart with the friction method, as well as the size of the right auricle. In experiments, before and after death, the friction method with the phonendoscope showed that the whole heart and its undivided parts were correctly mapped out. Aufrecht refers particularly to the fact that the phonendoscope is not absolutely indispensable to the friction method; in fact, the latter may be used in conjunction with an ordinary stethoscope.—*Munchener med. Wochenschrift*, December 29, 1896.

MENTAL DISEASES AND MEDICAL JURISPRUDENCE.

By A. W. HOISHOLT, M.D., Assistant Physician, State Asylum for Insane, Stockton, Cal.

Dangers of Thyroid Extract.—DR. R. HESSLER, of the Northern Indiana Hospital for Insane, has recently reported a case of catalepsy treated with large doses of desiccated thyroid gland, in which this treatment appears to have brought on an attack of exophthalmic goitre. The cataleptic had lain immovable in bed for over three years. All motor and sensory manifestations were absent, and feeding required the constant use of a nasal tube. The effect of increasing doses of the gland was a gradual return to the normal condition, so that he was able to speak and walk. When the dose of 75 grains a day was reached, symptoms of exophthalmic goitre developed, the pulse going up to 160, which required the temporary discontinuance of the remedy. After a few days the catalepsy returned and the treatment was again taken up with the same results: disappearance of the cataleptic symptoms, but reappearance of the exophthalmic goitre. This latter, artificially produced in this manner, had all the characteristics of the true disease, with the exception that there was no glandular enlargement, and that the symptoms disappeared whenever the dose of the remedy was diminished or it was discontinued. The author concludes, from a study of this and other cases, that Graves' disease is due to an over-stimulation of the nervous system by products of the thyroid gland, and that the administration of this gland as a remedy is injurious, the proper treatment being one tending to reduce the functional activity of the thyroid gland.—*Journal American Medical Association*.

Is Trional a Useful Hypnotic, and is it to be Preferred to Sulphonal?—Under this heading, DR. J. V. MERING has published the results of a comparison of the opinions of a number of authorities obtained by circular letter, with those already to be found in the literature. According to these results, trional is an excellent hypnotic, not superceded by any other. Its action in simple agrypnia is certain and prompt; also in sleeplessness of the neurasthenic, and in the insomnia associated with restlessness and excitement met with in mental diseases. In sleeplessness caused by bodily pain it is very serviceable in combination with morphine (0.005 g.: $\frac{1}{12}$ gr. to 1 g.: 15 gr.), and it does not seem to lose its effect where its use is required for some time. It has no deleterious effect on

the intestinal tract or on the kidneys, and it is well borne by patients suffering from heart disease. It has no toxic effect on the blood; the red blood cells are not destroyed, but at first a hypoleucocytosis and afterwards a hyperleucocytosis are observed; at the same time a diuretic effect was observed on animals. It has been found that trional is more easily and more completely metamorphosed in the body than sulphonal. The theory that sulphonic acids are products of the decomposition of sulphones and are excreted with the urine, appears to be contradicted by the fact that the alkalescence of the blood is not diminished and that there is no increase in the percentage of ammonia in the urine. Hematoporphyrinuria cannot with certainty be prevented in the use of trional, but it is more frequently observed after sulphonal. The cause of this phenomenon is unknown; it is not directly due to the administration of sulphonal or trional. During the first stage of the physiological effect of both remedies, the respiration becomes irregular. In most cases where a quieting medicine or hypnotic is required, trional is preferred by the writer to sulphonal or any other remedy of this class, as it produces the desired effect to a greater extent and is less apt to bring about the disagreeable after-effects, which watchfulness may almost entirely prevent. A continuous, daily administration of trional is, under all circumstances, not to be recommended, and is almost always unnecessary. If a continuous use of quieting medicines becomes necessary, then an alternation with other remedies must be made. The dosage is, according to Dr. Mering, frequently excessive. Usually a dose of 1 gm. (15 grs.) is sufficient, and an increase of the dose with 0.25 gm. (3.75 grs.) shows a decided effect.—*Therapeut. Monatshefte*.—*Centralbl. f. innere Med.*, Feb. 6, 1897.

Sulphonal Poisoning in a Case of Melancholia Agitata.—DR. E. P. HEARDER reports a case of melancholia agitata in a man, 43 years old, who received 1.0 gm. of sulphonal thrice daily. On the sixth day the remedy was discontinued, because of a diminution in the amount of urinary secretion. On the following day a marked albuminuria developed, with edema of the eyelids and sopor; pulse and temperature remained normal. After treatment with purgatives and diuretics, and the administration of large quantities of fluid, the urine was, on the eighth day, free from albumin and blood cells.—*Lancet*, November 14, 1896.

The Absorption of Arsenic by the Corpse from the Cemetery Earth.—DR. KRATTER, in speaking of this question, says that not only are the physical and chemical qualities of the cemetery earth to be considered, but that there are other circumstances which have a bearing on the question, such as the nature of the material of which the coffin is made, and the condition of the corpse. If the former be tight and undamaged, and the latter fairly well preserved, especially if the cavities of the body have not been opened, then arsenic cannot have passed from the earth into the internal organs of the body. When decomposition has progressed and the coffin has collapsed, a mechanical admixture of the surrounding earth with the remnants of the corpse takes place, and if, in such a case, the earth contains arsenic, then the possibility of obtaining evidence to prove a poisoning is out of the question; at any rate, one of the chemists, who is to make the chemical examination of the body, should be present at the exhumation.—*Wiener klin. Wochenschr.*—*Centralbl. f. innere Med.*, March 20, 1897.

FORMULÆ.

By H. E. SANDERSON, Ph.B., M.D., Assistant Physician State Asylum for Insane, Stockton, Cal.

Cutaneous Pruritus :

Magnes. sulphat. 3i
 Ferri sulphat. 3i
 Acid. sulphuric. dilut. 3ii
 Syrup. prun. virg. 3i
 Aq. q. s. ad. 3iv

S.—Teaspoonful after each meal.

For local treatment :

Acid. carbolic. 3i
 Liquor. potassii 3i
 Olei lini 3i

—*Vermont Medical Monthly*—*Medical Fortnightly*.

Tobacco Habit Cure:

Gold and sodium chlor.
 4 grains
 Strychnine nitrate. 2 grains
 Nitroglycerine. ½ grain
 Fld. ext. digitalis. 20 minims
 Capsicum 25 grains
 Salicin 100 grains
 Cinchonidine sulph. 100 grains
 M. et ft. 100 pills.

S.—Take one three times a day.—

Medical Bulletin—*Hot Springs Medical Journal*.

PUBLIC HEALTH.

By W. R. CLUNESS, M.A., M.D., San Francisco, Cal.

Mortality for April, 1897.—The deaths registered in 42 town districts of the State, during the month of April, in a population of 697,066, correspond to an annual rate of 14.16 a thousand, the total mortality having been 825. 40 deaths were due to zymotic diseases, giving an annual rate of .86 a thousand. Of these, 6 were due to diphtheria, 1 to cholera infantum, 7 to typhoid fever, 4 to diarrhea and dysentery, 5 to cerebro-spinal fever, 5 to whooping cough, 7 to croup, 0 to intermittent and remittent fevers, 2 to scarlet fever, 3 to measles, and 0 to small-pox. 220 deaths resulted from diseases of the respiratory organs, giving an annual rate of 3.62 a thousand. Of these, 125 were due to consumption, 67 to pneumonia, 27 to bronchitis, and 1 to pulmonary congestion; the rate being, for consumption and pneumonia, 2.14 and 1.15, respectively. 105 deaths resulted from diseases of the heart, 6 from alcoholism, 1 from erysipelas, 36 from cancer, and 353 from causes not given. The average annual death rate from all causes occurring in the ten largest cities and towns in the State, and representing a population of 579,000, was 14.88. The highest rate for the month occurring in cities having a population of 10,000 or more inhabitants, was reported from Vallejo, the lowest from San Bernardino.

METEOROLOGY.

Summary for April, 1897.—*Temperature.*—The normal temperature of the State for April is 57.7°; the average for April, 1897, was 60.6°, a departure from the normal of +2.9°. The highest monthly mean was 83.0°, at Ogilby; the lowest, 35.0°, at Bodie. The maximum temperature was 112°, at Salton and Volcano Springs, on the 16th. The minimum, 11°, at Bodie, on the 9th. The absolute range for the State was 101°. The greatest monthly range was 66°, at Tulare; the least, 32°, at Castle Pinckney.

Rainfall.—The normal precipitation for the State for April is 2.36 inches; the average for April, 1897, was 0.51 inches, a departure from the normal of -1.85 inches. The greatest monthly precipitation was 3.70 inches, at North Bloomfield; the least, nothing, at numerous places throughout the State.

Wind.—The prevailing direction of wind ranged from W.N.W.

Unusual Features.—There were no unusual meteorological phenomena for the month.—JAMES A. BARWICK, Director California Weather Service.

California—Tabular Statement for April, 1897.

STATIONS.	TEMPERATURE.						RAINFALL.		Mean Relative Humidity	WEATHER.			WIND.	FURNISHED BY—	
	Mean.....	Highest.....	Lowest.....	Mean High- est.....	Mean Low- est.....	Mean Daily Range	No. of Days Rain Fell.....	Total Rain- fall.....		No. of Clear Days.....	No. of Fair Days.....	No. of Cloudy Days.....			Prevail- ing Direc- tion.
Auburn	62.0	87	41	66	49	17.0	3	1.51	85	19	5	6	N.W.	Southern Pacific Company.	
Berkeley.....	58.0	84	41					0.44					S.W.	Obs. University of California.	
Colfax.....	60.0	92	36					0.00					N.	Southern Pacific Company.	
Coronado.....	62.0	86	46				1	0.02	72	23	3	4	N.W.	Hotel del Coronado.	
Eureka.....	51.0	72	36	58	44	14.0	8	2.55	87	9	13	8	N.W.	Weather Bureau Dept. Agr.	
Fresno.....	64.0	94	39	78	49	29.0	1	0.30	55	27	3	0	N.W.	"	
Keeler	67.0	92	41					0.00					N.	"	
Los Angeles...	61.0	90	40	73	49	24.0	1	0.02	73	16	12	2	W.	"	
Monterey	56.0	78	42					0.40					S.W.	Southern Pacific Company.	
Napa.....	58.0	87	33	72	44	28.0	3	0.33	72	20	8	2	S.W.	Station Napa Insane Asylum.	
Oakland	59.0	85	40	70	52	18.0	3	1.65	77	19	8	3	N.W.	Chabot Observatory.	
Paso Robles...	59.0	83	40				0	T		26	3	1	N.W.	Agr. Experimental Station.	
Red Bluff.....	63.0	93	35	76	51	25.0	4	1.22	48	21	7	2	N.W.	Weather Bureau Dept. Agr.	
Sacramento*...	63.0	87	42	74	51	23.0	2	0.25	43	24	5	1	S.W.	"	
San Bernardino	62.0	92	34	81	50	31.0	2	0.08		18	10	2	W.	A. K. Johnson, M. D.	
San Diego.....	60.0	88	46	67	53	14.0	1	0.02	72	23	3	4	N.W.	Weather Bureau Dept. Agr.	
San Francisco..	57.0	84	45	65	51	15.0	3	0.27	75	21	5	4	W.	"	
Santa Barbara..	60.0	86	41	70	49	21.0	1	0.02	69	23	3	4	W.	Hugh D. Vail.	
Santa Cruz.....	59.0	90	36				1	0.22		22	1	7	W.S.W.	W. R. Springer.	
Yuma.....A. T.														Weather Bureau Dept. Agr.	

Blank (----) indicates data missing.

Humidity at Sacramento at 5 P. M.

Departments.

Occidental Medical Times.

COMMUNICATIONS are invited from all parts of the world. When necessary to elucidate the text, illustrations will be furnished without cost to the author.

SACRAMENTO: JUNE, 1897

MEDICAL BANQUETS.

From time immemorial men have feasted. Ancient history furnishes many examples of feasts and banquets magnificent, usually in celebration of great events; always as evidences of rejoicing. Down through the later centuries we find the same custom surviving—varied at times by striking examples of the excesses of the glutton, the voluptuary or the pervert. In more recent times we find the habit existing with unabated vigor, until it seems to be impossible, for the Anglo-Saxon race at least, to have much of any celebration, whether historical, national, local or merely convivial, without a feast more or less pretentious.

This universal custom of mankind, from all ages, is doubtless a survival of the habits of his savage and still more primitive ancestors. In the keen struggle for existence ever present with primitive man, and with his still later savage descendants, the question of food was a predominant one. Such social life as we have any record of amongst these peoples centers upon the means and methods of procuring food. To-day, amongst the lowest savages, we find the same keen effort, well shown in the inexorable fate of the Fuegian, whose inhospitable environment, as DARWIN informs us, compels him to wait upon the falling tide for his subsistence. We have an evidence of its survival to-day in the "big eat" of the North American Indian, who, according to CATLIN, after fasting for many days, will gorge himself with a quantity of animal food, the consumption of which is incomprehensible to the white man, and whose system must, thereafter, recuperate by a period of fasting.

In our own times feasting seems to be inseparable from the meetings of societies and associations. Whether this be in conformance with the "eat, drink and be merry" of the ungodly, or the more refined but equally fallacious "feast of reason and flow of soul" of the more intellectual, it is not for us to decide; suffice it that the

custom remains. With associations and gatherings of the laity such feasts are not unseemly. Even temporary excesses produced by the fullness of the heart, *via* the flowing bowl, may be overlooked. We think, however, that no such justification or excuse can be adduced in support of medical banquets, as they are commonly found. We will assume, and we think fairly, that the only real purpose of eating is to sustain life. That there may be, incidentally, an added pleasure derived from seasonable and well prepared food is admissible and not improper; that this pleasure may be greatly increased by the setting or serving of the meal, and by pleasant associations, is undeniable. The environment and the association is even directly productive of gain to him who eats, if thereby the process is conducted in a more leisurely manner, and with the consumption of more time than is usual with the modern "man of affairs." When, however, more than this is sought from the table, we cannot but regard it as an evidence of vice, or of degeneration.

That men of scientific education and attainments should constantly directly violate their instincts, their education and the precepts of their daily life, is incomprehensible. This is truest of the medical profession. Its life work consists wholly in the prevention and the cure of disease. It should practise what it preaches; nor should it, at the behest of custom, overload its viscera, or tax its excretory organs to excess. To see a number of educated medical men gravely consuming unhygienic mixtures at unearthly hours, is an extraordinary spectacle—but when, in dealing with these mixtures, the efforts of "tired nature" are hampered by an excess of alcohol, the spectacle becomes painful. It must be said, truthfully, that at the average medical banquet there is always a fair proportion of men who are more or less unwilling victims, and whose better judgment is, for the time being, overruled by mistaken notions of custom, propriety or conviviality. Why, then, should this custom be continued in connection with our gatherings? Why should a scientific meeting, at which valuable lessons may be learned, and great pleasure derived from the association with one's fellows, be marred for hours to come by the nausea, the aching head and the general malaise with which nature surely visits those who transgress her laws?

The practice of the profession naturally inculcates certain general principles in the mode of life of the physician. The character of

his work, with its worries and responsibilities, and the further tax upon his strength due to irregular hours, as regards meals and rest, compel him to guard himself as carefully as possible if he would long survive in active practice. The spectacle often witnessed at medical gatherings is the very antithesis of this. To say that such a spectacle is demoralizing, and even disgusting, is to put it mildly. A drunken physician is an object for more contempt and less pity than is meted to the average man, and his baneful influence is certainly more widespread than that of any engaged in other callings. A too frequent accompaniment of medical banquets and post-prandial oratory is a general looseness in diction that even descends to the obscene, and when the wine has been freely passed the quality and quantity of this form of mental relaxation is both choice and abundant. What a picture is here presented for the laymen in attendance, or for the guests, outside our profession, that have been bidden to the feast! That these latter may be *particeps criminis* is not an excuse, for usually they are followers, not "leaders of the blind." It is true that, with the absence of intoxicants, much mental irresponsibility and temporary moral perversion will be absent, but intoxicants seem to be inseparable from a banquet, and are rarely absent on festal occasions.

These reflections have been prompted by the banquet at the recent meeting of the State Medical Society. It was not worse than former occasions of this character, nor was it any better. It is true that none of the participants were seriously injured physically, yet we are assured that mental wounds both wide and deep were caused by the intemperate utterances of some of the speakers. It has been demonstrated on more than one occasion in the history of the State Society that festivity and social intercourse alike can be enjoyed without the "big eat" of the savage, or the bibulous indulgence of his more civilized analogue.

At the meetings held in Los Angeles and in Sacramento there was, as far as we are aware, an absence of intoxicants at any of the entertainments. We think that, from a social standpoint, the results were as satisfactory as any. With such successful examples, cannot the annual banquet be replaced by some other form of festivity, or, if it be impossible in the metropolis to provide another form of entertainment, cannot each alternate meeting be conducted as a purely scientific function and without any social aspect.

NOTES.

American Journal of Insanity.

Commencing with the 54th volume (July 1, 1897), the *American Journal of Insanity*, heretofore published at 34 Washington street, Chicago, will be transferred to Baltimore and published by the Johns-Hopkins Press. The editorial control will be in the hands of a committee of the American Medico-Psychological Association, consisting of Dr. Henry M. Hurd and Dr. E. N. Brush, of Baltimore; Dr. G. Alder Blumer, of Utica, N. Y., and Dr. J. Montgomery Mosher, of Albany, N. Y. All communications for the *Journal* should be addressed to Dr. Henry M. Hurd, care of the Johns-Hopkins Hospital, Baltimore, or to any of the editors. All exchanges and business communications should be addressed to the Johns-Hopkins Press, Baltimore.

A Sensational Patient.

A particularly sensational article appeared recently in two of the San Francisco daily papers, purporting to be an interview with a lady who had a grievance against two physicians. She alleged that she had swallowed a black-head pin, about $1\frac{1}{2}$ inches long; that she could feel the pin low down in her throat, and that it was causing her much distress. The physicians in question, Dr. A. E. Brune and Dr. Geo. B. Somers, attempted to locate it by means of forceps and probang, but without result. She complained that in the efforts at removal she was treated with extraordinary brutality and lack of skill, and seriously injured thereby. The facts may easily be read between the lines, when it is stated that the lady concerned revels in sensations. She has received much free advertising through her attempts to break the will of her brother-in-law, a rich miner; through attempts to go on the stage; through evictions from New York hotels, and through her recent interest in the Durrant case.

Twelfth International Medical Congress, Section on Laryngeal and Nasal Diseases.

The following is the programme of the proceedings of this section: Suppurations of the Nasal Accessory Sinuses (except the maxillary), their Diagnosis and Treatment, Dr. E. Moure, Bordeaux; Dr. M. Hajek, Vienna. Cancer of the Larynx, its Diagnosis and Treatment, Prof. O. Chiari, Vienna; Dr. G. Catti, Fiume. The Causes and Treatment of Loss of Voice in Singers, Prof. H. Krause, Berlin; Dr. M. Lermoyez, Paris. The Progress made in the Treatment of Laryngeal Tuberculosis since the last International Congress, Dr. Ruault, Paris; Dr. J. W. Gleitsmann, New York. Laryngo-Stroboscopy, Prof. Simonowsky, St. Petersburg. The Use of the X rays

in Laryngo-Rhinology, Dr. I. Macintyre, Glasgow; Dr. Mount-Bleyer, New York. Esophagoscopy, Prof. V. Hacker, Innsbruck. The Adaptation of Photography to Laryngology, Dr. I. R. French; Brooklyn; Dr. Flatau, Berlin. Besides the above it is proposed to arrange a joint meeting with the other Sections on the question of Serum Treatment of Diphtheria. Dr. A. F. Belayeff, of Moscow, is the Secretary of the Section.

SOCIETY PROCEEDINGS.

SACRAMENTO SOCIETY FOR MEDICAL IMPROVEMENT.

Regular Meeting, April 27, 1897.

The President, W. J. HANNA, M.D., in the Chair.

Fees for Examining Applicants for Industrial Insurance.—THE PRESIDENT, DR. W. J. HANNA, said: I wish to bring up a question in connection with examinations for life insurance, upon which I wish to obtain the opinion of the Society. Recently a gentleman came to me—an agent for the Pacific Mutual Life Insurance Company—requesting that I make examinations for him. It appears the company has a special department called the industrial department. The object of this department is to insure people who are not able to carry large amounts of insurance, especially girls who work for a small salary. They insure for any sum up to \$500. The fees are correspondingly small, the agent stating that they were only able to pay a small fee for examinations. He informed me that the examinations had been made during the past year or two in this city, but on account of their examiner having to leave town, he sought my services. I stated that before accepting the position I would bring the matter before the Society at its next meeting. In Class "A," for \$1,000, the fee is \$1, and \$1 extra for a urinary examination. For Class "C," for amounts ranging from \$20 to \$500, the fee is 50 cents. For children they pay 25 cents. It takes from five to ten minutes for an examination, it being altogether superficial. The speaker then read a letter from Dr. W. R. Cluness, the medical director of the company, which contained the following statements: "It is not expected that an examination of a one or five hundred dollar risk will be made with as much care and thoroughness as a five or ten thousand dollar risk in the ordinary department, for while such an examination might be very satisfactory to the doctor, it would be death to the company compelled to pay for the time consumed. As a necessary result, medical examinations in industrial insurance are limited to policies large enough to justify a small expense for what is, in reality, a superficial examination. The great reliance of the company rests upon the supervision of its field force and inspectors, and the hasty scrutiny of the application for insurance by the office force and by the medical director."

DR. F. B. SUTLIFF said he was examining for a society that did not pay any fee and it took in more members than any other of which he had any knowledge. He had no objection to any one examining for a small fee, where a larger one could not be obtained, but he was suspicious as to the charity part of it.

DR. H. H. LOOK: I once had some experience in these industrial companies, and I found out after I was connected with them about a month, that no man, if he had anything at all to do, could afford to take the position at any price. I examined for the John Hancock Industrial, of Boston. They paid 15 cents. It took more time, physical energy, and nervous force to do that work than to make a regular examination at \$5. You would have to go to the house and answer a thousand and one questions that the mother might put to you. I am firmly convinced it is nothing but a confidence game, and I am not speaking metaphorically either. They call it legitimate in theory, but, in fact, it resolves itself into a bunco business. The agent will go to the house and tell the

mother that, for a few cents a week, in case of death, she will get \$200. The mother will scrape a few cents together each week for a while, but, in 299 cases out of 300, they drop it in a short time. They do not inquire into it; there is no benefit to be derived from it, and very often deaths occur of which the Coroner must, if possible, ascertain the cause. These things are facts; I have observed them too often. I do not see how any member of this Society could have the assurance to connect himself with such an institution and do the work for that amount of money.

DR. G. W. OGDEN: I have filled a similar position, temporarily, to favor one of the members of the Society, and afterwards I had the position offered to me, but refused to accept it. It required as strict an examination as that of the old line companies, except it did not call for an examination of the urine. Most of them were \$50 applications, and every one would have required a house visit.

DR. L. A. HARCOURT: If it were not for the name of Dr. Cluness being connected with it, I would say it was a fraud. I can endorse all that Dr. Look has said. It is an inducement held out for the babies to die.

DR. F. GUNDRUM: This Society can just wager a big sum on one thing, and that is, that the Pacific Mutual did not get this up for the benefit of babies or medical examiners. This insurance company must be pretty hard pressed as to its financial standing. I give this as the statement of some of the best insurance men in the State. It is a scheme to improve the financial condition of the company. These baby companies have existed for a long time, and if anybody will read the history of some of them in the city of London, they will be horrified. Murder after murder has been committed there to get the insurance. I can endorse what Dr. Look has said in regard to the matter. Now, as far as this Society is concerned, we should hold up the price of medical services, and I think we should reject any such proposition as to make examinations for any company for 50 cents. I know that Dr. Cluness stands very high in the estimation of the profession in Sacramento, and no doubt justly so, but that should cut no figure here.

DR. T. W. HUNTINGTON: I wish to say, with regard to this scheme of insurance, that when the matter was suggested to me over a year ago, I said to Dr. Cluness that, from my knowledge of that form of insurance, I had grave objections to it. Knowing Dr. Cluness to be a broad-minded man, and one who would be the last person to lend himself to any illegitimate scheme, I listened with a good deal of interest to the subject. His argument was something like this: "That it was intended largely for the insurance of working men and working women, in order to provide these people with a means of leaving their families a small sum of money in case of demise." With regard to the insurance of children, his arguments seemed to be well taken. I said to him that I had heard considerable about this baby insurance business and the dire results of that form of commercial dealing, but he assured me that a large number of reputable bodies were indulging in this form of traffic and with a great amount of satisfaction. He further stated that the Pennsylvania law was not enacted against such schemes as this. There is a law in Pennsylvania which prohibits child insurance, but it does not affect this particular class of insurance, and I was rather disposed to be favorably impressed as regards examinations. He asked if the Society took action against cheap insurance, and I called his attention to the present by-laws and the stand the Society had taken, but he insisted that this should not come within the jurisdiction of the by-laws, and, while he left me a little in doubt, I confess I was, in a measure, moved toward favoring it. On later consideration of the matter I still feel kindly towards it, but my faith in cheap insurance is shaken. I am in doubt as to the propriety of breaking the law governing this Society. I am not prepared, however, to vote affirmatively upon the matter at the present time.

DR. G. L. SIMMONS: I have heard more to-night in regard to the nature of this insurance than ever before. I was spoken to about a week ago in regard to the propriety of members taking part in this form of examinations, and I have given the subject some thought since, and, as said to-night, it was only the weight given to this subject by the medical director of the Pacific Mutual, that led me to even consider the proposition of a less consideration for our services than that which we had voted to take. The more I think of it the more I

disapprove of yielding the point which we have held so far, and I must confess I am disappointed in the doctor's letter in regard to the reasons why any of us should be led to make examinations for a less sum than that which we have voted upon. The only reason reached by me is one of charity. I have considered all along, during my whole life, that the question of charity was an individual one. If I choose to go to a house and make a visit, and that the condition that I see there shows that she or he is poor, I always feel myself perfectly free to make no charge if I so desire; but it is not a question of charity with a life insurance company; it is cold business. We do know how slight is our hold upon the matter of a proper fee for any of their examinations. If we are not entitled to a certain amount of credit in regard to the upholding and building up of these life insurance companies, who is? Upon whose shoulders does it rest if not upon the medical fraternity? I think this is a scheme to be voted down.

DR. H. L. NICHOLS: This question has taken a wide range. With regard to insurance companies, I have always looked upon them and their examinations as a business proposition. They receive all the premiums they can get, and when a person dies they will pay what they agree to if they cannot get rid of it. The fee that we have adopted is little enough for an examination of any class of life insurance.

DR. J. H. PARKINSON: While Dr. Cluness is a member of this Society, he is still an officer of this company. If the company adopted this scheme it is not for Dr. Cluness to interfere. This branch of insurance is very profitable and there is no question about it. The amount paid out is small, comparatively, while the amount paid for the insurance is high. I think it is perfectly proper for any man to make these examinations if he wants to, but it is not proper for a member of this Society to continue to do that kind of work and to still retain his membership. I do not believe this Society can afford to recognize this form of insurance, which is so disastrous in its effects, as a legitimate business.

A motion that the fees offered by the Pacific Mutual Life Insurance Company for examinations in its industrial department be considered illegitimate, and that they be not accepted by members of the Society, was then put and adopted, a roll call showing all the members present, with one exception, voting for it, the latter declining to vote.

An Unusual Danger in Anesthesia.—DR. T. W. HUNTINGTON: I wish to call the attention of the Society to an incident in connection with anesthesia, as showing one of its dangers. I was engaged to operate upon a young man, 26 years of age, of powerful build, very strong, and, in every sense, an athlete. I ordered ether given as usual, recognizing the fact that he was a patient who might make some trouble. After continuing etherization for about four minutes he began to struggle. With the assistance of three men I attempted to restrain him, but in spite of our efforts he slid off the table. He was able to walk and to talk, and was apparently conscious, but intoxicated. He had a vicious expression upon his face which I shall not forget for a long time. We immediately gave up the idea of continuing the etherization. He went to his room on the second floor of the building where I thought he would quiet down. I followed and found him rational enough, but at the same time I could see he was intoxicated. He reached for a cigar, saying he wanted to smoke. He then suddenly raised the wire screen and it was evident he was going to jump if not opposed. I saw the case was desperate and attempted to hold him, but he slid through my hands and out of the window, feet first. I seized his wrist firmly, he grasping my right hand, leaving an impression that was visible for a week. I lowered him down as far as it was possible to do so. He then dropped, falling about six feet, into a soft flower bed. He ran across the street, almost naked, and entered a brewery office, where he was easily controlled and returned to his room. The operation was completed the following day under chloroform anesthesia, having the patient securely pinioned. It was noticed that he began to act in the same way, and had he not been tied down we would undoubtedly have had a repetition of the occurrence. These cases are not new. I have seen others similar to it, but none so pronounced. I shall, in future, use greater precautions, and pinion the patient in all doubtful cases. I wish to mention, incidentally, the great danger where patients of this character are in the habit of carrying side arms. It was a fortunate thing that this man did

not have a six-shooter, as he said he should certainly have used it had he secured one. I mention this case to call the attention of those using anesthetics to the disastrous results that might occur in various ways.

Affective Insanity.—DR. F. R. WAGGONER read a paper upon this subject. He said: This division or class of insanity was a classical one emanating from no less an authority than Maudsley. The speaker said that it was this type of insanity that usually gave rise to miscarriages of justice and unpleasant differences between the Courts and the profession. He assumed that all cases of affective insanity could be diagnosed if pains be taken by the physician, and, if he be sufficiently informed on these matters, rendering him eligible to give expert testimony in the Courts. There was one distinguishing diagnostic point in the incipency of these cases that he wished to emphasize, and that was change of action. This should be carefully noted, for insanity of this type was of gradual invasion. The speaker cited some cases from authorities and from his own experience, illustrative of the subject, and, in conclusion, said, "the guilt or innocence of these cases, when explosions lead them like the force of a tornado, into crime, murder, and arson, or what not, is with the Courts. They will never distinguish between the bad man and the madman; they know nothing of pathology, and too often refuse to be taught. Crime should be punished, and the sick sent to the asylum."

DR. L. A. HARCOURT: It is a well known fact that not one physician in a hundred knows anything of insanity, or has any practical knowledge of the cerebral lesions or mental conditions that give rise to it. It is equally well known that the testimony of physicians in cases of alleged insanity is absolutely worthless, sheds no light upon the question at issue, and serves only to confuse the minds and cloud the judgment of jury, counsel, and Courts. Yet, men will go upon the witness stand and give testimony as experts in cases of alleged insanity, involving the liberty and sometimes the life of the accused, who never spent five consecutive minutes in the study of mental diseases. In almost every instance the testimony of the expert is in favor of the side upon which he has been called. Men of equal standing and reputation in the profession have given testimony diametrically opposed to each other as to the sanity or insanity of the accused, a part of which must have been diametrically opposed to existing facts. By that character of testimony the profession has been brought into disrepute. I would have more confidence in the opinion or judgment of the neighbors of the accused, who had known him long and well, were familiar with his peculiarities, eccentricities, and habits, and who would, therefore, be qualified to detect any departure from the normal, than I would in that of the best expert alienist whose opinion, if not created, had at least been warped by *ex parte* statements in favor or against the accused. Lawyers always have a theory as to the mental condition of the accused, and they expect the physician to give testimony in its support. If he cannot, or will not do so, he does not get the job. Against that kind of testimony the profession should enter an indignant protest.

DR. T. W. HUNTINGTON: I wish to join issue with Dr. Harcourt in regard to the attitude of medical gentlemen in connection with cases where insanity is the matter in question. I believe that it is within the proper jurisdiction of any physician with intelligence which warrants his conscience in passing upon such a question, to determine whether the mental state is one of sanity or insanity. It has fallen to the lot of many of us to act in the capacity of expert and so far as I know, sincerity and honesty have characterized medical evidence as a rule, and this, too, without reference to financial considerations. In fact, it is usual with medical gentlemen to go into Court without thought of fee or reward. While it is probable that a few are influenced by dishonest considerations, it has been my observation that the medical expert goes upon the stand, almost invariably, with the feeling that he will give his best thought and judgment upon matters under consideration. Within the past year our local Courts have afforded two notable incidents in which medical expert testimony was of the greatest possible value. In each an expert jury was called upon to pass upon the sanity or insanity of the prisoner. I happened to be fortunate enough to be a member of each of these bodies. I say fortunate, inasmuch as both cases were of extreme interest, and from their decision I derived a considerable degree of satisfaction. Upon each occasion, Dr. Hoisholt, of the Stock-

ton Asylum, was a member of the jury and presided over the examination. In the case of Kovalev, our attention was directed to facts which conclusively demonstrated that the accused was feigning insanity. His subsequent confession and mental condition proved Dr. Hoisholt's position to be well taken. In the case of Raten, a similar inquiry was had, and in this instance we were shown that the prisoner was undoubtedly a paranoic and insane. He was held to be insane by the Court. The trial was suspended and the prisoner remanded to the Stockton Asylum. Since that time it has been shown that the prisoner was clearly insane and hence incompetent to go on with his trial. He has slowly degenerated and will doubtless die of general paresis.

DR. H. H. LOOK: It is difficult for a physician to decide as to the moral responsibility of such patients. I believe that a majority of the members will agree with me that the evolution of this disease is slow—it comes on gradually, often unnoticed in the beginning, and that these sudden manifestations are a sudden and often temporary excitement of the gradually increasing trouble. Certainly, in the beginning of this condition there is some responsibility on the part of the patient, and I am sure I would not, with my present knowledge, go on the stand and give testimony as to when that responsibility ceases. It is, to my mind, an injury to society to permit persons who were insane to go free again without some surveillance. Persons who are insane, who have been sent to an asylum and, after staying a few months, have been turned loose as cured, are like a bomb-shell let loose in the community, which may explode at any moment. I believe that society is looking to science for some adjustment of this insanity question, in relation to the law and Courts of justice, and it is within the province of the medical profession to adjust this matter, and to determine who are insane, and who are responsible or not. I believe that there should be an insane commission to decide on all points of mental aberration, and that that commission should be selected from men who have made a long and careful study of the subject, and not from political favoritism, for it requires a long preparation for that particular branch of our profession.

DR. J. H. PARKINSON: I agree with the gentleman who opened the discussion as regards the average medical practitioner and expert testimony. I disagree with him when he says that the opinions of the neighbors should be taken in preference to that of an expert. My observation has been that the opinions of the laity are valueless as regards diagnosis. It is an easy matter to know that a man is a maniac, but to draw the distinction between sanity and insanity is entirely beyond them. The laity will always decide against physicians and against the Courts. I have always experienced a great deal of difficulty in inducing the friends of such persons to believe that their condition was mentally abnormal. We have a great responsibility in these cases where the defendant should be sent to an asylum and detained there for his life instead of being hung.

DR. G. L. SIMMONS: The difficulties in the way of determining the insane condition are easily overcome with the exception of those cases where wills are contested or crimes have been committed. In early times a commission was appointed by the County Judge, and during about 20 years in which I was a member, I examined, probably, 1,400 cases. During that long period I gave the subject considerable study, and we never had a contested case unless property interests were involved, or a murderer was induced to "play crazy." In these last named cases there is generally an effort made by attorneys to confuse medical evidence, and they may be well called the *opprobrium* of the profession. Even when there is no possible disagreement among the physicians called to examine the subject, the medical opinion is not considered final, and jurors in many instances have permitted their sympathies to overcome the plainest evidences of mental aberration. I will cite one case directly in line with those mentioned by the author. A man whom I had known for many years, of regular habits, and the head of a large family, kind and affectionate, began to be irregular, dissipated, and suspicious. There was an entire change in his whole life, and after several months of unaccountable behavior he called at my office with his good wife, both of them being well advanced in years. In her presence he at once told me that he was about to get a divorce from her for lewd and unfaithful conduct. That every night he could prove her wickedness, as he had seen different men come into their common bed-room for such a purpose. The poor woman was quite overcome by such charges, and when I

asked him why he did not resent the approaches of these men, he replied he was given chloroform by his wife, and could neither speak nor move. I then asked if the chloroform was administered by holding it over his face. He at once replied, "Oh no, it was put on a dress in the nearest closet." Many stories equally ridiculous and improbable were told by him in this relation, and the three examining physicians agreed that the man was of unsound mind. Thinking it a friendly act to try to prevent a public scandal in the case, I wrote a note to the attorney of the man and suggested that the suit for separation of husband and wife should be dropped, and that the case should be sent to a private asylum. Much to our surprise the medical opinion was contested in the Courts. Well-meaning but misguided friends talked of doctors railroading sane men to an insane hospital, and after the expenditure of considerable money to lawyers, and the full exposure of private family troubles, a jury decided that the man was sane. Subsequent events proved that he should have received special treatment, and one of his first acts after his discharge was to suspect and accuse of robbery an honest friend who had been most active in the effort to prove his sanity.

DR. PARKINSON: On the afternoon of the day on which the individual mentioned by Dr. Simmons was acquitted, I happened to be in a down town establishment, and this individual was sitting in the front part of the store. The merchant, who was a patient of mine, said, "come out until I show you this man whom you wanted to send to the asylum." I asked him how he was feeling and commented upon his narrow escape from incarceration, adding, "if you do not hold your tongue and behave yourself you will surely go to the asylum next time." He replied, "I intend to do so."

SAN FRANCISCO COUNTY MEDICAL SOCIETY.

Regular Meeting, April 13, 1897.

The President, F. B. CARPENTER, M.D., in the Chair.

New Members.—A. EICHLER, M.D., E. F. DONNELLY, M.D., R. H. ORR, M.D., P. W. NATHAN, M.D., J. C. KECK, M.D., A. B. MCKEE, M.D., R. M. GRAY, M.D., and W. B. BARBAT, M.D., were duly elected members of the Society.

Intussusception in an Infant Six Months Old, with Death in 24 Hours.—DR. W. F. CHENEY read a paper upon this subject. He said: The baby was taken suddenly ill on September 26, 1896, with pain followed by vomiting, loss of appetite, fever, and marked pallor. No physician was summoned until the morning of the 27th, when a bloody passage from the bowels, without fecal matter, excited the parents' alarm. There was nothing to indicate intussusception except the bloody passage, and all the symptoms rather implied an acute indigestion. The case accordingly was treated for indigestion. The baby grew steadily and rapidly worse, and died at 2:45 on the afternoon of the 27th, barely 24 hours after it was taken ill. An autopsy was made on the 28th, and the ileum found crowded through the ileo-cecal valve, for three inches of its extent, and firmly caught there, so that considerable force was required to release it.

DR. HENRY GIBBONS, JR.: My experience has been singularly free from these cases. I can only remember one seen in consultation, some years ago. The patient was a child 8 or 10 years old, but I cannot recollect the outcome of the case. I remember seeing, in the museum of Kings' College Hospital, in London, quite a number of specimens showing how far the trouble can go. In some of those cases one or two feet of the intestine was involved.

DR. J. ROSENSTIRN: While without doubt, many symptoms pointed to a gastro-enteritis and indigestion which might lead us astray, still there was one point which might and should give cause for energetic treatment, that was, the absence of fecal matter. Gastro-enteritis and intussusception have many points in common, but the distinguishing feature is the vomiting and the absence of fecal matter. If high rectal injections do not bring away any feces, a strong suspicion of intussusception may be entertained. The mortality from operations on individuals having this affection is very great; still, where mechanical means fail, it is the only recourse.

DR. C. E. FARNUM: Such conditions become a bugbear to us and we frequently think we have such a case, when really it is not. My experience has been more with older patients. We often find the symptoms mentioned by Dr. Rosenstirn, and after giving high enemas and no evacuations occurring, we are quite sure that we have a case of intussusception. Shortly after, possibly while we are deliberating as to operative procedure, a discharge takes place and the symptoms subside. High enemas for diagnostic purposes are, therefore, unreliable.

DR. H. M. SHERMAN: I agree with Dr. Farnum. There are many things in the doctor's mind while looking over a sick child. We must be guided mostly by the objective symptoms. Many times it is extremely difficult to diagnose the exact condition.

DR. C. G. KUHLMAN: When we consider that women often retain feces for a week or ten days without any symptoms of obstruction, retention for 24 hours by a child can hardly be considered as pathognomic of intussusception, as Dr. Rosenstirn has stated. An operation on a child of six months old for some intestinal disorder, that is incapable of positive diagnosis, is hardly justifiable. Dr. Cheney did what most of us would have done under similar conditions.

DR. ROSENSTIRN: Dr. Kuhlman misunderstands me. I did not oppose Dr. Cheney's procedure, in waiting; I only said that if high enemas would not cause an evacuation, an earlier diagnosis might have been arrived at. We all make mistakes; I have made many myself. I would not have given an opiate; but I would have given high enemas, and if no evacuation followed, my belief in the presence of an intussusception would have been strengthened.

DR. W. B. LEWITT: Among the methods of diagnosis given, no mention was made of one spoken of by Dr. Holt, in his latest work on infancy and childhood, namely, inflation of the intestine by air. When this is done a gurgling sound is heard when the obstruction has been reduced. Some years ago I remember a case mentioned in the journals where gas from a syphon of carbonated water was used, a tube being attached to the faucet.

DR. CHENEY: In the discussion to-night I notice that the remarks of those members who deal more directly with diseases of children, bear more closely to my own. It is quite easy, no doubt, at an autopsy to see what might have been done.

A Year's Experience with the X-Ray.—DR. P. M. JONES read a paper on "A Year's Experience with the X-Ray," and exhibited a number of skiagraphs. Amongst these were the following: A normal elbow in a child showing the epiphysis and diaphysis, which was very valuable; another with a lesion of the epiphyses backward, and a vertical fracture of the humerus—conditions that are very hard to diagnose. A compound comminuted fracture of the elbow joint was also shown, and a fracture through the olecranon subsequently wired. Another picture was that of an injury to the inner condyle of the tibia in a child 8 years old, with a bowing of the leg as the child grew. It shows the epiphyses united. There was also shown a fracture of the femur above the knee joint, and a compound comminuted fracture in a sailor, six months untreated, the leg having grown in shape like the letter S. This case, which showed an interposition of other structures, was finally cut down upon and wired with good results.

DR. J. H. BARBAT: I have seen a case of dermatitis following the use of the X-rays. It was rather a peculiar one. For nine days there was absolutely no change, when quite suddenly a large vesicle formed and broke, discharging a clear serum. This case differed from anything else in the way of dermatitis. It resisted treatment very obstinately, though I do not know that skin grafting had been tried. The difference seems to be due to a peculiar traumatism of the skin.

DR. J. F. MCCONE inquired whether anything had been done with the X-ray in measuring the child *in utero*, and also as to the diameters of the pelvic outlet? He inquired whether a differential diagnosis between a fibroid tumor and a fetus in the early months could be made?

DR. JONES: I have not made any experiments in the way of measuring the child *in utero*. It is perfectly feasible, but it might produce miscarriage. Such a result occurring in the later months has been reported from London.

DR. G. W. DAVIS inquired whether, in exposure of the chest to the X-rays, there has been any effect on the internal organs, particularly the heart?

DR. J. C. STINSON inquired whether, by the X-rays, tubercular arthritis could be positively diagnosed?

DR. JONES replied that it could, almost with certainty.

DR. STINSON: The reason I inquired was that a man had come under my care whose ankle had been examined at the *Examiner* X-ray Laboratory, presided over by Dr. Jones, where such a condition was declared not to exist. A short time after an operation was performed, and the ankle bones, which were found to be tuberculous, were removed.

DR. C. G. KUHLMAN: Speaking for the practising physician who is called upon to make the same diagnosis at the bedside by means of his five senses, from the objective and subjective symptoms present. I wish to say that, after a careful study of the apparatus and of the literature that has appeared since Röntgen's discovery, it has no place in actual practice. Owing to the similarity or uniformity in density of the soft tissues, in health and in disease, differentiation by this method is impossible; nor will it differentiate between benign and malignant tumors of bones. Whenever I look at an X-ray apparatus and similar outfits, the little German proverb comes to me, "Fine folks have fancy things, and what they lack they have made."

DR. JONES, in replying, said: As to the constitutional effects where the chest is exposed to the X-rays, I have never seen a rise in temperature nor an exhilaration of the pulse. As to the static machines in the production of the X rays, it requires great care and nice balancing to succeed with such apparatus. A coil and tube will do good work with but little care, but one has to be an adept to succeed with the static machine. The dermatitis is due, no doubt, to the free exposure of the slowly penetrating rays. The difference between normal and tubercular bone in the shadows in an X-ray skiagraph is quite distinct.

Catheterization of the Ureters—Its Indications and Contraindications.—

DR. M. KROTOSZYNER read a paper upon this subject. He said he was aware that this subject was still in its infancy. Four years ago Wiley Meyer, of New York, had alluded to the value of cystoscopic observation of the flow of urine from the ureters as a means of diagnosis in renal diseases, and said: "All cystoscopists are anxiously waiting for a cystoscope to catheterize the ureters." This desideratum has now been attained, and we have instruments that enable us to obtain the urine directly from each kidney. Catheterization of the ureters must be regarded as one of the most important factors in diagnosis in renal surgery. Pawlik and Kelly were the first to catheterize the ureters in women, and Nietze in men. All the instruments that have been subsequently introduced are merely modifications of their ideas. The catheter may be allowed to remain in the ureter without harm to the kidneys for a long time. Bozman reports cases of pyelitis in which he irrigated the pelvis of the kidney through a catheter that remained in the ureter for over twenty-four hours. Two of his cases were cured by this procedure. Casper also reports two cases cured in a similar manner. In vaginal hysterectomies, especially in those where the uterus is fixed by numerous adhesions, the danger of ligating the ureter might be avoided by leaving catheters in the ureters during the operation. If this be not practicable catheterization of the ureters before operation would enable us to ascertain their precise position so that we might subsequently avoid them. The contraindications of catheterization should also be borne in mind. In tubercular and purulent infections of the kidney, Israel advises against catheterization, owing to the danger of infecting the healthy organ. The speaker said that Knights had expressed the opinion to him that, so far, catheterization of the ureters had done a great deal of harm, because it was being employed without strict indications.

SAN FRANCISCO MEDICO-CHIRURGICAL SOCIETY.

Regular Meeting, May 2, 1897.

L. C. LANE, M.D., in the Chair.

Hydatid Cyst of Liver in a Boy Seven Years of Age.—DR. W. F. CHENEY read a paper upon this subject, and presented the convalescent case. The child, of Italian parentage, presented when first seen a protuberant abdomen, which was due to some kind of tumor, the nature of which could not be determined. The history threw no light upon the diagnosis. Loss of appetite and languor being with emaciation, the main symptoms. Microscopic examination of the fluid

obtained by puncture gave no aid, on the contrary was misleading, as no hooklets were found, but instead pus cells were abundant. A diagnosis of sarcoma of the kidney was made, with a possibility of hepatic abscess, and operation advised. The latter was done by Dr. Rixford. Ecchinococcus cysts were found—two in number—each in the liver substance.

DR. EMMET RIXFORD: After describing the means taken to open the two cysts from one opening said: *Tinea ecchinococci*, the tape-worm of the dog, are small flat worms, usually having not over three segments, and are commonly found in the intestine of dogs. The worms have eggs, which are discharged in the feces of the dog. Children in playing with the dog, probably, carry the eggs to their mouths and they are swallowed, the eggs find their way into the child's stomach, where the envelope of the egg is dissolved. It enters the portal system, and is deposited in the liver or elsewhere in the body. Here the worm develops forming a cyst—the mother cyst. The inner walls bud and daughter cysts are formed. The steady growth of the cyst gives rise to the clinical symptoms, which are all referable to pressure.

DR. C. CUSHING: It occurs to me that one of the causes may be the eating of celery, lettuce, and such varieties of uncooked food as may be found in salads. Dogs go about depositing their dejecta impartially on the street or elsewhere, and there is no reason to suppose that garden truck is exempt from this source of pollution. The dogs of the vegetable garden may, possibly, have taken a part in the causation of the disease in this little Italian boy, whose father attends the garden. The vegetables are hastily and imperfectly cleaned, and the result, hydatid disease, may easily follow after the consumption of these uncooked vegetables. Unboiled water is also a source of infection.

DR. T. FISCHER: The whole family of tape-worms are transferred in much the same way, although some make use of an intermediate host. *Filaria sanguinis hominis* is an example of this. From its position in the blood vessels of man, it is taken by the mosquito. It has been found in the blood of the mosquito. The latter carries it to a pond, or to a small, slow running stream. Large numbers of mosquitos are drowned in these places, and the infected water being drank by man brings back the disease to him.

DR. GRAYHAM: In Australia the ecchinococcus disease is very common. In Sidney a special ward of the hospital is set aside for cases of this disease. All parts of the body are affected. I saw two cases while there, in which the disease was located in the tibia. I think Dr. McCormack has written a book upon the subject.

DR. L. C. LANE: Many years ago I attended the pathological course of the great Virchow. I was with him every day for a period of six months, and yet in all the immense amount of material in his collection I saw only one specimen of ecchinococcus, and that was in the brain. On this coast I have seen, besides the present case, only one other. This was in a man, and was of immense size. It was before the advent of aseptic surgery. The man died. Dr. Hirschfelder tells me that he also has seen but one case. Lüchart has studied the subject particularly well, and has written a great deal upon it.

Sarcoma of Superior Maxilla.—DR. EMMET RIXFORD presented a middle aged man, operated upon for adeno-sarcoma of this region. The external carotid was first ligated. The incision of Otto Weber was then made, and following it was removed, the superior maxilla, and all the bones of nearly one-half the face, as far as the base of the brain cavity. The malar bone was sawn through at its inner extremity and the larger outer end left *in situ*. The nasal cavity was shut out from the cavity of the mouth by stitching the mucous membrane of the hard palate to the mucous membrane of the cheek. The patient was in bed less than a week, union by first intention being obtained. The case was shown as an example of the slight deformity caused by the Weber incision. The only dressing applied to the incision after the operation was a painting with tr. benzoin comp. The procedure was palliative, and recurrence is probable. The deformity is insignificant, the cheek being well rounded. The voice has its natural intonation.

CORRESPONDENCE.

The Meeting of the State Society.

The meeting of the State Medical Society seems to have brought out more ill

directed criticism than it did enthusiasm—a condition which is not new, but which points out year by year the unfortunate state of affairs in the medical profession in California; the submersion of the profession and the elevation of the individual members not through their loyalty and love and work for the honor of their profession, but by the interpretation which they put on their own ideas, and their exaggerated importance of them. In only a few instances was the previously announced discussion of a paper actually held, and in most of these few instances it amounted to a criticism wide of the mark, or a partial autobiography of the speaker. Is it any wonder, then, that year after year we ask ourselves why do not the members from the interior towns join the Society and attend its meetings? What does the country member want? He wants you to make it interesting and profitable for him to attend these meetings. He wants to feel that he is a member of the Society on equal footing with every one else. He does not ask a question of these men who are so anxious to tell of their successes, and he hears no mention of failures, such as he has had. None of his medical friends could come down to the meeting, and he does not know many people. He wants to have a good time (it is his one vacation that year perhaps), and he does not know where to go. He would like to see some of the hospitals, but nobody seems to know just how or when to direct him to visit them, and he does not know that he is welcome when he gets there. Do you think this man is coming to San Francisco again when the Society meets here? Do you think he is going from the northern part of the State to Fresno next year? Why do we go to Fresno or San Diego? Some one will tell you that this brings the State Society nearer to the country practitioner. It would seem to be conclusively proven in the history of the Society that this is not so. When the practitioner in a small town gets a vacation he wants to be where he can enjoy a change in his manner of life, and profit himself if he can at the same time, and there is no doubt but that 99 per cent. of the medical profession outside of San Francisco would rather come here than have the Society go to them—that is, provided they would go to the Society at all. And here is the whole question, What can we do to make them come? We got the answer from that pointed speech of our professional brother who responded at the dinner to the toast, "The Country Doctor," and who said: "The life of your Society lies in its country members, and if you would have them come you must make them a real part of the Society; make them work, put them on committees, and expect a lot from them, and do not treat them when they come here like a lot of outsiders." We may flatter ourselves that we squared things with our country members by the dinner we gave them—that disgusting exhibition of bad taste, bad manners, and indecent jokes—saved only by some of the country members and a few of our San Francisco men from being positively a disgrace. We treated our country brethren to some very questionable speeches; we indulged in the most uncalled for and personal criticism; we flattered ourselves right and left, and avoided carefully any references of an inviting or kindly nature to our country brethren, although we heard from two of them almost the only two decent speeches of the evening, and we wound up by forgetting to honor our President-elect by noticing his presence among us, and then rubbing that fact into him. Certainly the Society is deserving of severe criticism, but I cannot see the justice or excuse for such unwarranted indulgence in personalities as some have shown through part of our medical press. The individual things were not as bad as the conditions of a society which allowed them, or the spirit in which they have been attacked. These are the things that we want to take to ourselves and correct, and we shall not then have as poorly attended and profitless meetings.

VERITAS.

OBITUARY.

W. P. GIBBONS, M. D.

DR. WILLIAM PETERS GIBBONS, third son of Dr. William Gibbons and brother of Drs. Henry and Edward Gibbons, some time deceased, was born in Wilmington, Del., April 19th, 1812. His father was the youngest of thirteen children, and he was the third child in a family of thirteen, of whom none died until after the youngest was married and had several children. The family is of English ancestry, its early representatives being among the first

members of the Society of Friends, commonly known as Quakers, and settling in Chester county, Pennsylvania, with one of the William Penn colonies, in 1681. The subject of this sketch, as well as all the members of his family, received careful early training and education. Later he learned the printing business and established himself in Philadelphia, where he edited and published, for some years, a periodical called *The Advocate of Science*. At the same time he continued his scientific studies, and here laid the foundation for that love of botany which characterized him through life. His health failing after some years, he returned to Wilmington and devoted himself to farming; but, in 1839, accepted an offer of the management of a seminary in Poughkeepsie, N. Y., where he resided for a number of years. Meanwhile he pursued his studies in medicine and graduated in 1847, at the University of the City of New York. In 1852 Dr. Gibbons left New York with his family for California, whither three of his brothers had preceded him. He was stricken with cholera in Panama, many of his fellow-passengers dying of this disease on the voyage from that city to San Francisco. After a few years' practice in the latter city, he removed, in 1856, to Columbia, Tuolumne county, then a thriving mining town. Finally, in 1861, he settled in Alameda, where he continued to reside until his death on May 17th, 1897. In 1835 he married Mary Robinson, of New York, by whom he had eight children, three of whom survive him. Dr. Gibbons took a notable interest in scientific and public matters wherever his lot was cast. He was a member of one of its medical societies in the early days of San Francisco, of the Alameda County Medical Society, and of the State Medical Society, of which he was President in 1886. For many years he was an active member of the California Academy of Natural Sciences. He was largely instrumental in establishing the Public Library of Alameda, and has been called the father of its public schools. For years he was a member of its Library and School Boards. He was also active and influential in local politics. Though not prolific with his pen, and leaving little in permanent form in a literary direction, he was, nevertheless, a ready and entertaining writer. He probably wrote more upon botanical subjects than upon medical. As Chairman of the Committee on Indigenous Botany, Pharmacy, Materia Medica, and Medical Chemistry of the State Medical Society for 25 years, he furnished many reports, and as the time of meeting in April last approached, he was much disturbed at his inability to prepare his quota for the Society. When over 60 years of age Dr. Gibbons sustained what was believed to be an intracapsular fracture of the neck of the right femur. The trunk and thigh were placed in a firm plaster of Paris splint. Complete recovery resulted. Examination after death demonstrated that there had been an oblique fracture of the neck, extending upon both sides of the capsular ligament. The immediate cause of death was chronic pneumonia and engorgement from cardiac insufficiency, due to an old valvular lesion. As will be appreciated from the foregoing, Dr. Gibbons possessed more than ordinary mental endowments. He was also a man of strong principles and of decided character and individuality. At the same time his tendencies were kindly and philanthropic. He was not a man of expediency nor policy, but, as has been said: "He hated oppression and scorned sham and hypocrisy." * * *

MEDICAL NEWS.

LICENTIATES OF THE BOARD OF EXAMINERS.

At a meeting of the Board of Examiners, held April 2, 1897, the following were granted certificates to practise medicine in this State:

Frederick S. Ball, Los Angeles; Med. Dept Univ. City of N. Y., May 7, '95.
 Harold Brunn, San Bernardino; Med. Dept. Univ. Penn., Mar. 3, '97.
 Joseph W. Dean, Chico; St. Louis Coll. Phys. and Surg., Mo., Mar. 17, '97.
 Geo. W. Forester, Elberon, Iowa; Iowa Coll. Phys. and Surg., Des Moines, Iowa, April 4, '94.
 E. B. Frick, San Francisco; Med. Dept. Univ. Cal., Nov. 16 '88.
 J. J. Gingles, San Francisco; Louisville Med. Coll., Ky., Feb. 25, '87.
 George Given, Los Angeles; Marion Sims Med. Coll. Mo., April 25, '92.
 Charles Rosencroft Greenleaf, Berkeley; Med. Coll. of Ohio, Mar., '60.
 J. H. Hawkins, Drain, Or.; Med. Dept. Vanderbilt Univ., Tenn., Mar. 1, '88.
 E. Janson, Astoria, Or.; Med. Dept. Univ. Minnesota, June 2, '92.
 Henry H. Kane, New York; Long Island Coll. Hosp., N. Y., June 1, '77.
 James F. Kearney, San Francisco; Med. Dept. Univ., Cal., May 13, '96.

Abram L. Kellar, Covina; Med. Dept. Univ. Louisville, Ky., Mar. 1, '51.
 F. M. Madison, Los Angeles; Coll. Phys. and Surg., Keokuk, Iowa, Feb. 26, '84.
 Ezra McDougall, Los Angeles; Med. Dept. Univ. City of N. Y., Mar. 20, '73.
 Arthur H. McFarlane, San Francisco; Med. Dept. Univ. Louisville, Ky., Mar. 30, '96.
 Eaton K. McNeil, Los Angeles; Columbian Univ., Washington, D.C., May 3, '94.
 Thurlow S. Miller, San Francisco; Detroit Med. Coll., Mich. Mar. 22, '92.
 Maurice F. Pilgrim, Portland, Me.; Med. Dept. Howard Univ., D.C., Mar. 10, '84.
 Edmund M. Rininger, San Francisco; Marion Sims Med. Coll., Mo., Mar. 23, '93.
 Andrew S. Russell, Los Angeles; Med. Dept. Univ. Penn., May 6, '92.
 Philip Henry Seibel, San Francisco; Cooper Med. Coll., Cal., Dec. 6, '92.
 Eleanor May Stow, San Francisco; Med. Dept. Univ., Cal., May 13, '96.
 John F. Warren, Fisher, Minn.; McGill Univ., Canada, Mar. 31, '96.
 William H. Weston, Los Angeles; Coll. Med., Univ. Southern Cal., June 4, '95.

REFUSED.

Enoch Mather, Patterson, N. J.

At a meeting held May 14, 1897, the following were presented certificates:

Elbert Ellis Cable, Portland, Or.; Med. Dept. Univ. Oregon, April 5, '97.
 Thomas F. Glass, Los Angeles; Med. Coll. of Indiana, Mar. 31, '91.
 S. James Hindman, Beaumont; Coll. Phys. and Surg., Baltimore, Md., Mar. 1, '81.
 Edward L. Inman, Pacific Grove; Miami Med. Coll., Ohio, April 1, '92.
 W. F. Jamison, San Jose; Barnes Med. Coll., Mo., April 6, '97.
 Henry Clay Johnson, Portland, Or.; Med. Dept. Univ. Oregon, April 5, '97.
 Hiram Latham, Oakland; Coll. Phys. and Surg., Keokuk, Iowa, 1863.
 Carl M. W. Lippe, Stapleton, N. Y.; Med. Dept. Univ. Georgia, April 1, '97.
 Albert Edward Mackay, Portland, Or.; Trinity Univ., Toronto, Canada, April 22, '87.
 Kenneth A. J. Mackenzie, Portland, Or.; McGill Univ., Canada, June 30, '81.
 William Alfred Phillips, Pacific Grove; Med. Dept. Western Reserve Univ., Ohio, Mar. 7, '88.
 Clayton S. Seamann, Portland, Or.; Med. Dept. Univ. Oregon, April 5, '97.
 R. N. Seaver, Corry, Pa.; Med. Dept. Univ. Wooster, Ohio, Feb. 26, '74.
 Mary Jane Stewart, Cayucos; Med. Dept. Univ. Cal., May 13, '96.
 Geo. H. Strowbridge, Portland, Or.; Med. Dept. Univ. Oregon, April 5, '97.
 Aaron Tilzer, Portland, Or.; Med. Dept. Univ. Oregon, April 5, '97.
 Ernest F. Tucker, Portland, Or.; Med. Dept. Harvard Univ., Mass., June 25, '84.
 Arthur Jules Vial, McMinnville, Or.; Med. Dept. Willamette Univ., Or., April 3, '94.
 Harriot E. Webster, Carpinteria; N. W. Univ., Woman's Med. School, Ill., June 13, '95.

CHAS. C. WADSWORTH, Secretary.

Official List of Changes in the Stations and Duties of Officers serving in the Medical Department of the U. S. Army (Division of the Pacific) from April 20, 1897, to May 20, 1897.

Leave of absence for twenty-three days is granted Major Robert H. White, Surgeon. Par. 2, S. O. 50, Dept. of Cal., May 12, 1897.

First Lieutenant John S. Klup, Assistant Surgeon, will proceed at once to Fort Walla Walla, Wash., reporting upon his arrival thereat to the Commanding Officer for duty as medical officer of the squadron of the 4th Cavalry on its march to Fort Yellowstone, Wyoming. Upon arrival of the squadron at the latter point, Assistant Surgeon Klup will return without delay to his proper station. Par. 1, S. O. 79, Dept. of the Columbia, May 15, 1897.

First Lieutenant Paul F. Straub, Assistant Surgeon, is assigned to duty with Troop C, 4th Cavalry, during the season at Sequoia National Park and General Grant National Park, California.

Captain Merritte W. Ireland, Assistant Surgeon, is assigned to duty with Troop K, 4th Cavalry, during the season at Yosemite National Park, California.

First Lieutenant George A. Skinner, Assistant Surgeon, will proceed to Fort Spokane, Washington, and report for temporary duty during the absence of Captain Edward R. Morris, Assistant Surgeon, on leave for six months, to take effect on or about May 18, 1897.

Leave of absence for one month, with permission to apply for an extension of one month, is granted Major John Van R. Hoff, Surgeon, Vancouver Barracks, Wash.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine Hospital Service (District of the Pacific) from April 20 to May 20, 1897.

M. J. Roseneau, Past Assistant Surgeon, granted leave of absence for three days.

ITEMS.

Dr. W. L. Cheshire has removed from Fruitvale, Cal., to Eugene, Oregon.

Dr. G. F. G. Morgan has located in Alameda; office, corner R. R. avenue and Park street.

Dr. A. Liliencrantz has removed from 616 Parrott Building to 359 Telegraph avenue, Oakland, Cal.

Dr. M. Masforroll has removed from 1019 Sutter street to 1530 Jackson street, San Francisco, Cal.

Dr. Grace Rains White has removed from 829 Bush street to 923 Geary street, San Francisco, Cal.

Dr. Tennison Deane has removed from 1003 Sutter street to room 46, Chronicle Building, San Francisco, Cal.

Dr. R. Beverley Cole has removed from 723 to 826 Sutter street, San Francisco, Cal., and has associated himself with Dr. W. M. S. Beede.